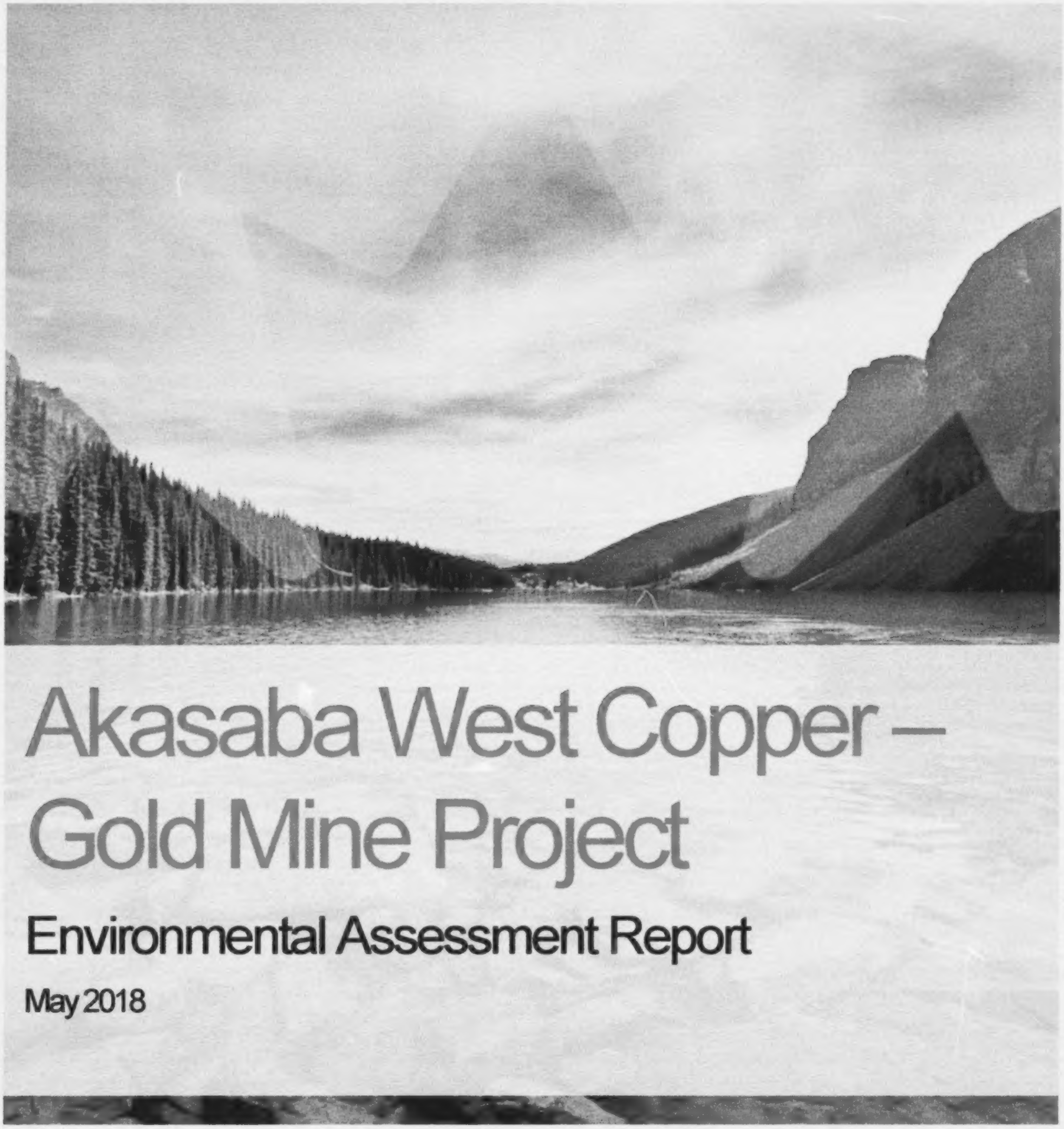
Canadian Environmental Assessment Agency
Agence canadienne d'évaluation environnementale



Akasaba West Copper – Gold Mine Project

Environmental Assessment Report

May 2018

Canada

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Catalogue No: En106-209/2018E-PDF

ISBN : 978-0-660-26556-8

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This document has been issued in French under the title:
Projet de mine de cuivre et d'or Akasaba Ouest

Summary

Agnico Eagle Mines Ltd. (the Proponent) is proposing the construction, operation and decommissioning of an open-pit gold and copper mine located approximately 15 kilometres east of Val-d'Or, Quebec. The Akasaba West gold and copper mine project (the Project) is located in the southern area of the territory covered by the *James Bay and Northern Quebec Agreement* and on territory used for traditional purposes by the Algonquins, namely the Nation Anishnabe du Lac Simon and the Nation Anicinapek de Kitcisakik. The plan is for the Project to extract 5.1 million tonnes of ore over a four-year period. The ore would be crushed on site and then sent by truck to the Goldex mine concentrator, also located near Val-d'Or. The ore would be transported over a six-year period. The Project includes an open-pit mine and containment and storage areas for overburden and waste rock. The Project does not include a tailings site, since the mining waste would be used in the rehabilitation of the Manitou site, a former tailings management facility located approximately five kilometres northwest of the proposed mine site.

Under the *Canadian Environmental Assessment Act, 2012*, the Project is subject to an environmental assessment by the Canadian Environmental Assessment Agency (the Agency), because it involves a designated activity as set out in paragraph 16(c) of the Schedule of the *Regulations Designating Physical Activities*.

> *"The construction, operation, decommissioning and abandonment of a new rare earth element mine or gold mine, other than a placer mine, with an ore production capacity of 600 tonnes per day or more."*

The Project is also subject to an environmental and social impact assessment by the Government of Quebec pursuant to division IV.1 of Quebec's *Environment Quality Act*. The Project was subject to the Canada-Quebec Agreement on Environmental Assessment Cooperation.

The Agency prepared this environmental assessment taking into account the concerns and comments of the First Nations of Lac Simon and Kitcisakik, the Organisme de bassin versant Abitibi-Jamésie, the Société de l'eau souterraine de l'Abitibi-Témiscamingue, the Conseil régional de l'environnement de l'Abitibi-Témiscamingue, the general public, Fisheries and Oceans Canada, Natural Resources Canada, Environment and Climate Change Canada and Health Canada. This report is based on a technical review of the Environmental Impact Statement of the Proponent and the assessment of the potential environmental effects of the Project.

As part of this environmental assessment, the Agency has taken into account the effects the Project could have on components of the environment that fall within federal jurisdiction as set out in subsection 5(1) of the *Canadian Environmental Assessment Act, 2012*:

- fish and fish habitat;
- migratory birds;
- changes that may be caused to the environment outside Canada; and
- with respect to the First Nations of Lac Simon and Kitcisakik, the impacts of the changes that may be caused to the environment on health conditions, the current use of lands and resources for traditional purposes, the physical and cultural heritage, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

Under subsection 79(2) of the *Species at Risk Act*, the Agency as the responsible authority assessed the effects of the Project on the following species at risk that are likely to be affected by the Project: the olive-sided flycatcher, the common nighthawk, the Canada warbler, the rusty blackbird, the short-eared owl, the woodland caribou, the little brown bat, the northern bat, the wood turtle and the snapping turtle.

The environmental assessment conducted by the Agency identified the following potential environmental effects:

- the alteration of fish habitat as a result of possible deterioration of water quality due to the input of contaminants;
- the alteration, disruption and loss of terrestrial and wetland habitats for birds;
- the alteration, disruption and loss of critical habitat for the Val-d'Or caribou herd, which could be detrimental to its restoration;
- the disruption and loss of territory and loss of terrestrial and wetland wildlife habitats that could lead to a decrease in or the possible contamination of resources that the First Nations of Lac Simon and Kitcisakik hunt, trap and gather; and
- the possible deterioration of the quality of air, noise exposure, water and country food, which could result in the deterioration of health conditions of the First Nations of Lac Simon and Kitcisakik.

The Proponent has committed to including mitigation measures in the Project that would minimize or compensate for the environmental effects of the Project. Key mitigation measures would include:

- a water management plan that includes collecting and treating mine wastewater;
- a compensation plan to offset the loss of wetlands (bird habitats);
- a compensation plan to offset the loss and disruption of critical habitat of the Val-d'Or caribou herd;
- a protection plan to avoid disturbance and reduce the risks of collisions;
- a noise and light management plan to limit disturbance of the wildlife, in particular the caribou, as well as land users;
- a dust management plan to limit emissions beyond the mining site; and
- a mine site rehabilitation plan that would prevent acid mine drainage and restore the quality of bird and caribou habitats.

If the Project were to go ahead, the Agency considers that the Proponent should implement an environmental monitoring program and follow-up program to ensure compliance with laws and regulations, verify the accuracy of the effect assessment and determine the effectiveness of the mitigation measures. These programs would allow the Proponent to make the necessary corrections. The results would be submitted for review by the Agency in collaboration with federal authorities and would be shared with representatives of the First Nations of Lac Simon and Kitcisakik.

The Agency considered that the Project is located in an area which, since 1930, has been subject to important mining and forestry developments, as well as urban, recreation and road developments. The Project would contribute to the disturbance of the ancestral territory for which access and use have been greatly diminished over the last 50 years. The Project could adversely affect the survival and recovery of the Val-d'Or herd of woodland caribou, which would add to an important change that took place over the last 50 years regarding the availability of wildlife resources for First Nations.

This environmental assessment report and the potential environmental assessment conditions have been released for public and Indigenous review and comment. The Agency has taken into account the comments received when finalizing the environmental assessment report and potential conditions, which it will be submitted to the Minister of Environment and Climate Change so that she can decide whether the Project is likely to have significant adverse environmental effects and issue a decision statement under the *Canadian Environmental Assessment Act, 2012*.

The Agency has established mitigation measures and the requirements of a follow-up program that will be proposed to the Minister of Environment and Climate Change for when she establishes the conditions for carrying out the Project in her decision statement under the *Canadian Environmental Assessment Act, 2012*. Conditions issued by the Minister of Environment and Climate Change would become legally binding on the Proponent if she ultimately issues a decision statement allowing the Project to proceed.

The Agency concludes that the Akasaba West copper and gold mine Project is likely to have significant adverse cumulative environmental effects on the current use of lands and resources for traditional purposes, and to cause adverse effects on the exercise of potential rights to hunt by the two Algonquin First Nations of Lac Simon and Kitcisakik on the territory claimed by the Algonquin Nations despite the implementation of accommodation and mitigation measures, and would make recommendations to that effect to the Minister of Environment and Climate Change. Regarding other valued components of the environment that are under federal jurisdiction, the Agency concludes that the Akasaba West copper and gold mine Project is not likely to cause significant adverse environmental effects in light of the implementation of key mitigation measures.

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1 Introduction

1.1 Brief introduction of the project

Agnico Eagle Mines Ltd. (the Proponent) is proposing the construction, operation and decommissioning of an open-pit gold and copper mine located approximately 15 kilometres east of Val-d'Or, Quebec (Figure 1). The Akasaba West Copper-Gold Mine Project (the Project) is located in the southern area of the territory covered by the *James Bay and Northern Quebec Agreement* and on land used for traditional purposes by the Nation Anishnabe du Lac Simon and the Nation Anicinapek de Kitcisakik. The Proponent plans to extract a total of 5.1 Mt of ore over a four-year period. The ore would be crushed on site and then sent by truck to the Goldex mine concentrator, also located near Val-d'Or to be processed. The ore would be transported over a six-year period. The Project includes an open-pit mine and containment and storage areas for ore, overburden and waste rock. The mine tailings would not be stored on the Project site because they would be used in the rehabilitation of the Manitou site, a former tailings management facility located approximately five kilometres northwest of the proposed mine site.

1.2 Purpose of the Environmental Assessment Report

This environmental assessment report provides a summary of information and analyses enabling the Canadian Environmental Assessment Agency (the Agency) to determine, in accordance with the *Canadian Environmental Assessment Act, 2012*, whether or not the Project is likely to cause significant adverse environmental effects, after taking into account the proposed mitigation measures.

The Minister of Environment and Climate Change will review this environmental assessment report which includes comments from First Nations, the public, and government authorities on the draft report, to produce her decision statement concerning the significance of the Project's adverse environmental effects as referred to in section 5 of the *Canadian Environmental Assessment Act, 2012*. The Minister of Environment and Climate Change may request additional information or require additional action in response to First Nation and public comments.

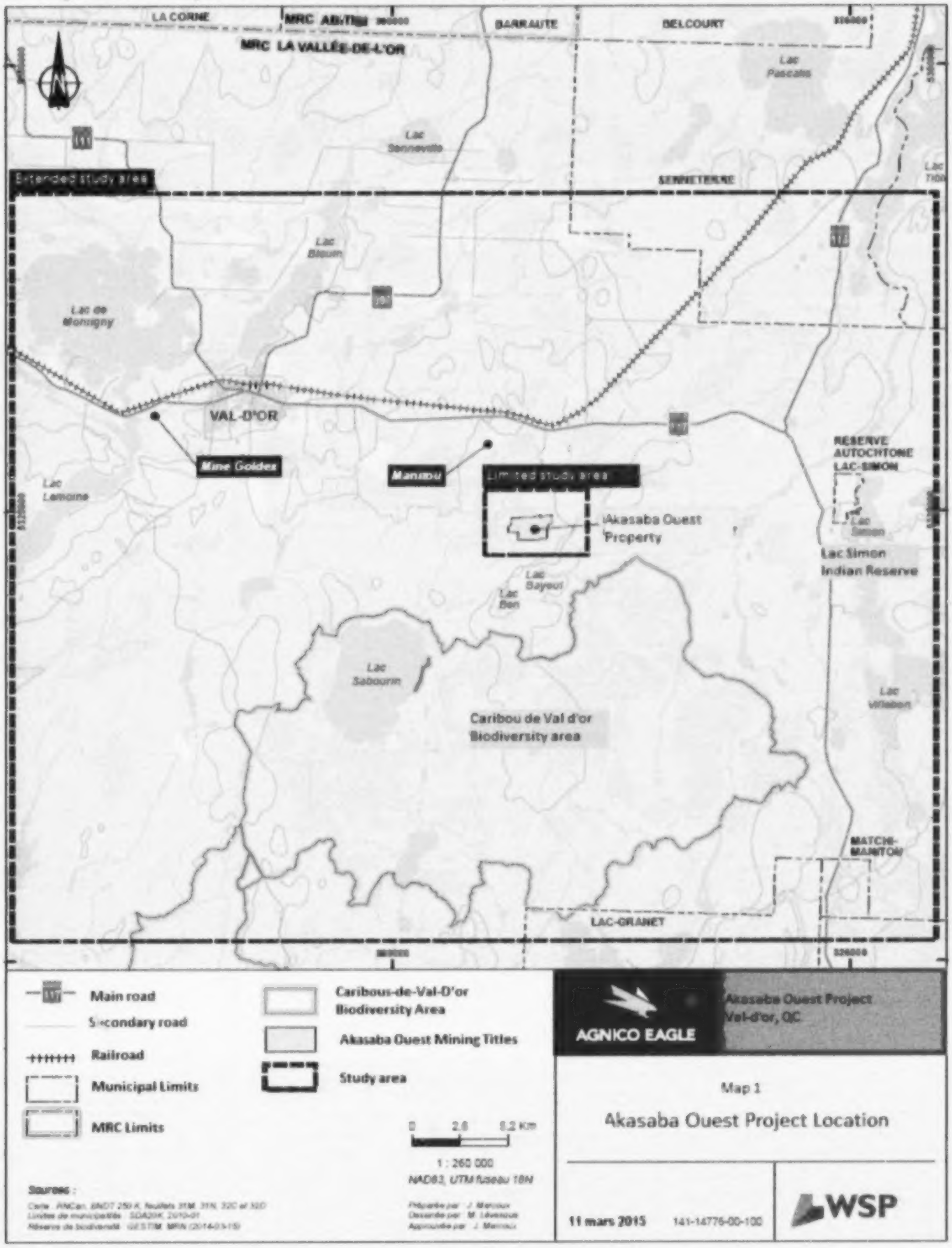
1.3 Scope of Environmental Assessment

The scope of the federal environmental assessment establishes the framework and limits of the analysis conducted by the Agency, such as the regulatory and legislative requirements of an environmental assessment, the environmental effects and factors considered, the valued components selected the spatial and temporal boundaries and the effects assessment approach.

1.3.1 *Environmental assessment requirements*

The Project is subject to a federal environmental assessment under the Act as it is a designated activity referred to in paragraph 16(c) in the schedule to the *Regulations Designating Physical Activities*. The Project involves the construction, operation, decommissioning and abandonment of a new gold mine with an ore production capacity of 600 t/day or more.

Figure 1 Project Location and Limited Study Area


LA CORNE
MRC ABITIBI
BARRAUTE
BELCOURT
MRC LA VALLÉE-DE-L'OR
Lac Pascalis
Lac Sennevile
SENNETERRE
Extended study area
Lac Blouin
Lac de Montigny
VAL-D'OR
Mine Goldex
Manitou
Limited study area
Akasaba Ouest Property
RESERVE AUTOCHTONE LAC-SIMON
Lac Simon
Lac Simon Indian Reserve
Lac Lemoine
Lac Bayeul
Lac Ben
Lac Sabourin
Caribou de Val d'or Biodiversity area
Lac Villebon
MATCHI-MANITOU
LAC-GRANET
Main road
Secondary road
Railroad
Municipal Limits
MRC Limits
Caribous-de-Val-D'or Biodiversity Area
Akasaba Ouest Mining Titles
Study area
0 2,6 5,2 Km
1 : 260 000
NAD83, UTM fuseau 18N
AGNICO EAGLE
Akasaba Ouest Project
Val-d'or, QC
Map 1
Akasaba Ouest Project Location
11 mars 2015
141-14776-00-100
WSP
Sources :

(WSP, 2015b)

Based on the Project description provided by the Proponent on October 10, 2014, the Agency conducted a screening of the Project to determine if an environmental assessment was required under the *Canadian Environmental Assessment Act, 2012*. On October 21, 2014, the Agency invited the public and Indigenous peoples to comment on the Project and its potential effects on the environment. On December 5, 2014, the Agency determined that an environmental assessment was required and commenced the process.

The Project is also subject to an environmental and social impact assessment by the Government of Quebec pursuant to division IV.1 of Quebec's *Environment Quality Act*. The Agency and the Quebec Ministry of Sustainable Development, Environment and the Fight against Climate Change collaborated on the environmental assessment, in accordance with the Canada-Quebec Agreement on Environmental Assessment Cooperation. The Agency also collaborated with the Quebec Ministry of Forests, Wildlife and Parks.

1.3.2 *Environmental effects considered*

As required by the *Canadian Environmental Assessment Act, 2012*, the environmental assessment examined the significance of potential adverse environmental effects that are within federal jurisdiction, which include the following effects pursuant to subsection 5(1):

- effects on fish and fish habitat as defined in the *Fisheries Act*;
- effects on migratory birds as defined in the *Migratory Birds Convention Act*, 1994;
- a change that may be caused to the environment, outside Canada;
- with respect to Indigenous peoples, an effect of any change that may be caused to the environment on health conditions, physical or cultural heritage, the current use of lands or resources for traditional purposes, or to any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

Under subsection 79(2) of the *Species at Risk Act*, the Agency, as the responsible authority, must identify the Project's adverse effects on species on the List of Wildlife Species at Risk (Schedule 1 of the *Species at Risk Act*) and their critical habitat. The Agency also must ensure that measures are taken to avoid, lessen and monitor adverse effects on birds at risk and that appropriate monitoring and follow-up programs are implemented if the Project is carried out. The measures must be consistent with applicable recovery strategies and action plans.

1.3.3 *Factors considered in the environmental assessment*

In accordance with subsection 19(1) of the *Canadian Environmental Assessment Act, 2012*, the environmental assessment took the following into account:

- the environmental effects of the designated project, including the environmental effects of malfunctions or accidents that may occur in connection with the designated project and any cumulative environmental effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out;
- the significance of these effects;
- comments from the public;
- mitigation measures that are technically and economically feasible;
- the requirements of the follow-up program in respect of the designated project;
- the purpose of the designated project;

- alternative means of carrying out the designated project that are technically and economically feasible and the environmental effects of any such alternative means;
- any change to the designated project that may be caused by the environment; and
- community knowledge and Indigenous traditional knowledge.

1.3.4 *Selection of valued components*

The valued components assessed by the Agency are presented in Table 1. The Agency focussed its assessment of the effects on the valued components within federal jurisdiction, pursuant to section 5 of the Act, and on species at risk, pursuant to subsection 79(2) of the *Species at Risk Act*.

Table 1 Valued components selected by the Agency

Valued Component	Rationale
Effects assessed pursuant to subsection 5(1) of the Act	
Fish and fish habitat	Encroachment on watercourses and changes to the quantity and quality of water could have adverse effects on fish and fish habitat.
Migratory birds	Increased noise levels and the disturbance and loss of terrestrial, wetland and aquatic environments could have adverse effects on migratory birds.
Change that may be caused to the environment, outside Canada	Greenhouse gases can lead to climate change
Indigenous peoples—health conditions	Degradation of water and air quality, and increased noise levels could have adverse effects on the health conditions of Indigenous peoples due to potential contamination of the country food and drinking water and noise disturbance.
Indigenous peoples—current use of lands or resources for traditional purposes	Increased noise levels and atmospheric emissions as well as the disturbance and loss of terrestrial, wetland and aquatic environments could result in changes to access to and availability of resources and could affect plant harvesting, hunting, trapping and fishing for traditional purposes.
Indigenous peoples—physical or cultural heritage and structure, site or thing that is of historical, archaeological, paleontological or architectural significance	The disturbance of terrestrial, wetland and aquatic environments could result in the disturbance or loss of cultural heritage resources and sites of archaeological significance and potentially change access to these resources and sites.
Effects identified pursuant to subsection 79(2) of the *Species at Risk Act*	
Species at risk	The disturbance and loss of terrestrial, wetland and aquatic environments, as well as increased noise levels and light pollution could have adverse effects on the following species at risk listed in Schedule 1 of the *Species at Risk Act*: olive-sided flycatcher, common nighthawk, Canada warbler, rusty blackbird, short-eared owl, woodland caribou, little brown myotis, northern myotis, wood turtle and the snapping turtle.

1.3.5 *Methodology and approach*

Spatial boundaries

Spatial boundaries identify the geographic areas within which the potential effects from the Project are expected to occur. They may vary from valued component to valued component depending on the nature of the potential Project interaction with the environment. Factors considered by the Proponent in determining spatial boundaries include local and regional environmental conditions, social, technical and land-use considerations, and, as available, Indigenous traditional knowledge and information on traditional use. The Proponent has therefore delineated a limited study area and an extended study area for the purposes of assessing the Project's effect on the biophysical and human environments. The Agency used the spatial boundaries defined by the Proponent.

The limited study area measures approximately 22 square kilometres (Figure 1). It includes the mine infrastructure and a 500-metre-wide corridor around it. It corresponds to the boundaries of where the greatest number of effects is anticipated. The limited study area was used to assess most of the effects on the following biophysical and human components: water, air, noise environment, luminosity, terrestrial and wetland environments, aquatic, terrestrial and avian fauna and their habitats, current use of lands and resources for traditional purposes, health and socio-economic conditions, physical or cultural heritage, and structures and sites of historical, archaeological, paleontological or architectural significance. This area was also used to assess the Project's effects on the woodland caribou.

The extended study area measures 2,100 square kilometres (Figure 2) and includes the limited study area. It situates the Project in its socio-economic context and permits the establishment of a profile of the communities and aspects of the human environment located nearby that are likely to be affected by the Project, namely the town of Val-d'Or, the Nation Anishnabe du Lac Simon, the Nation Anicinapek de Kitcisakik, the current road network around the Project as well as Lake Ben and Lake Bayeul, which are very popular cottage areas. To analyze the cumulative effects on migratory birds, the Proponent used an area of 1,942 square kilometres, which corresponds to a 25-kilometre radius around the approximate centre of the Project site. For current use of lands and resources for traditional purposes, the Proponent included the Ottawa River and Bell River watersheds covering the family hunting grounds established in 1928.

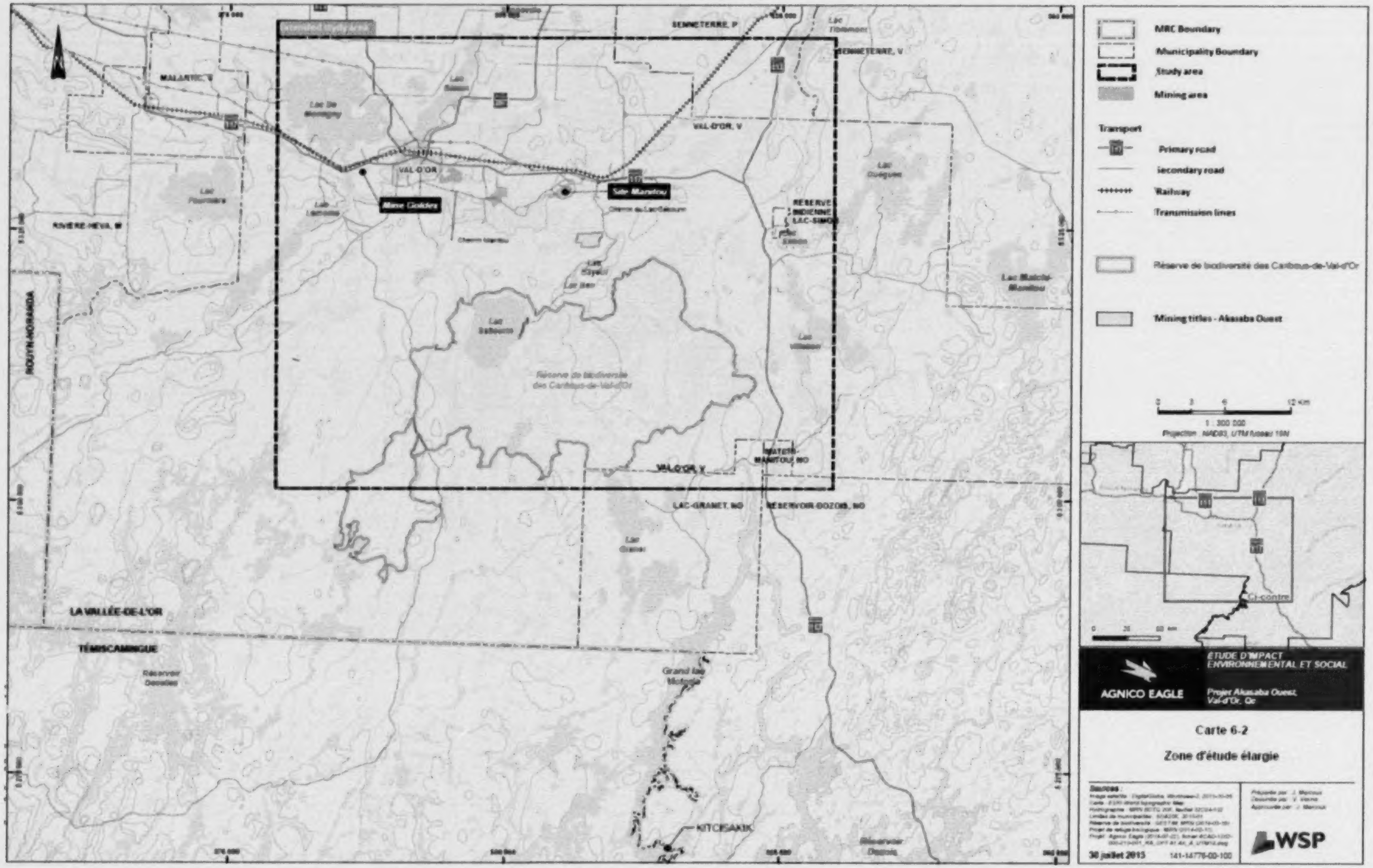
To analyze the cumulative effects on woodland caribou, the Agency and Environment and Climate Change Canada requested that the Proponent consider the Val-d'Or caribou's range, which measures 3,466 square kilometres, as defined in the Recovery Strategy for the Woodland Caribou published in 2012 by Environment Canada.

Temporal boundaries

Temporal boundaries are established in order to identify the timing and duration of all Project activities that could cause adverse effects on the environment. For this environmental assessment, the temporal boundaries considered include all the Project phases as listed in Table 3 (Chapter 2). The construction phase, lasting one year, includes the tree and vegetation clearing required for site preparation and the construction of mine infrastructure. The operation phase, lasting six years, is when commercial production takes place, including operation of the pit, waste rock management, mine water management and transportation of the ore. The Project's decommissioning phase, lasting two years, is the phase after commercial production has permanently ceased and the mine infrastructure is dismantled and the mine site restored. The post-closure phase, which starts at the end of the sixth year of the Project and of operation, and which lasts 10 years, would be focussed on mine effluent and groundwater quality monitoring, agronomic monitoring and ensuring the integrity of structures.

The Agency used the temporal boundaries defined by the Proponent: a 16-year period that encompasses the entire Project, from the beginning of the construction phase to the end of the post-closure or follow-up phase.

Figure 2 Extended study area



Extended study area
SENNETERRE, P
SENNETERRE, V
MALARTIC, V
VAL-D'OR
VAL-D'OR, V
Mine Goldex
Site Manitou
RIVIÈRE-HÉVA, M
ROUYN-NORANDA
RÉSERVE INDIENNE LAC-SIMON
Lac Sabourin
Réserve de biodiversité des Caribous-de-Val-d'Or
Lac Matchi-Manitou
MATCHI-MANITOU, NO
LAC-GRANET, NO
RÉSERVOIR-DOZOIS, NO
LA VALLÉE-DE-L'OR
TÉMISCAMINGUE
Grand lac Victoria
KITCISAKIK
MRC Boundary
Municipality Boundary
Study area
Mining area
Transport
Primary road
Secondary road
Railway
Transmission lines
Réserve de biodiversité des Caribous-de-Val-d'Or
Mining titles - Akasaba Ouest
0 3 6 12 Km
1 : 300 000
Projection : NAD83, UTM fuseau 18N
Ci-contre
ÉTUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
AGNICO EAGLE
Projet Akasaba Ouest, Val-d'Or, Qc
Carte 6-2
Zone d'étude élargie
Sources :
30 juillet 2015
141-14776-00-100
WSP

(WSP 2015a)

Analysis of effect

The Agency reviewed the environmental impact statement and the additional information provided by the Proponent, comments from the public and Indigenous peoples as well as the expert advice obtained from federal departments.

The Agency examined the effects of potential changes to the environment on the selected valued components in Table 1 and identified the residual adverse effects after taking into account the implementation of mitigation measures and the follow-up program. The Proponent's proposed mitigation measures are described at Appendix H. The Agency then determined the significance of the residual effects for each valued component.

To characterize the significance of the residual effects, the Agency used the same criteria as the Proponent: magnitude, extent and duration. The Agency also considered reversibility. These criteria are defined as follows:

- magnitude refers to the degree of disturbance to the component; it includes consideration of the component's ecological and social context, including its sensitivity and resilience to change;
- extent refers to the area of the affected territory or the proportion of individuals affected;
- duration refers to the period of time during which the valued component is affected;
- reversibility refers to whether or not a valued component would be able to return to its original state (prior to the environmental effect).

These criteria are the same as those suggested in the Agency's guide: Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the *Canadian Environmental Assessment Act, 2012*.

The Agency assigned three levels of effect for each criterion. For example, magnitude is noted as low, moderate or high. Duration can be short, moderate or long. Reversibility is described as reversible, partially reversible or irreversible. The Agency also took into account current federal and provincial regulatory standards, criteria and guidelines to determine the significance of the effects. Appendix A contains the applicable provincial and federal regulatory frameworks.

Appendix B describes the environmental effects assessment criteria. The Agency accepted the Proponent's criteria, thresholds and characterization of residual effects for the purposes of assessing environmental effects under the Act. Appendix C describes how the criteria are combined to determine the significance of the residual effects.

Appendix D summarizes the residual effects assessment for the valued components selected. The Agency's analyses and conclusions on the significance of the environmental effects on the selected valued components are presented in section 6.

2 Project Overview

2.1 Project Location

The Project is located 15 kilometres southeast of Val-d'Or, south of Route 117 and west of Lake Sabourin Road, in the regional county municipality (RCM) of Vallée-de-l'Or in Quebec, as shown in Figure 1. The Project would be located in the southern area of the territory covered by the *James Bay and Northern Quebec Agreement* and on territory used for traditional purposes by the Nation Anishnabe du Lac Simon and the Nation Anicinapek de Kitcisakik. Its geographic coordinates are -77.580744°W, 48.043099°N.

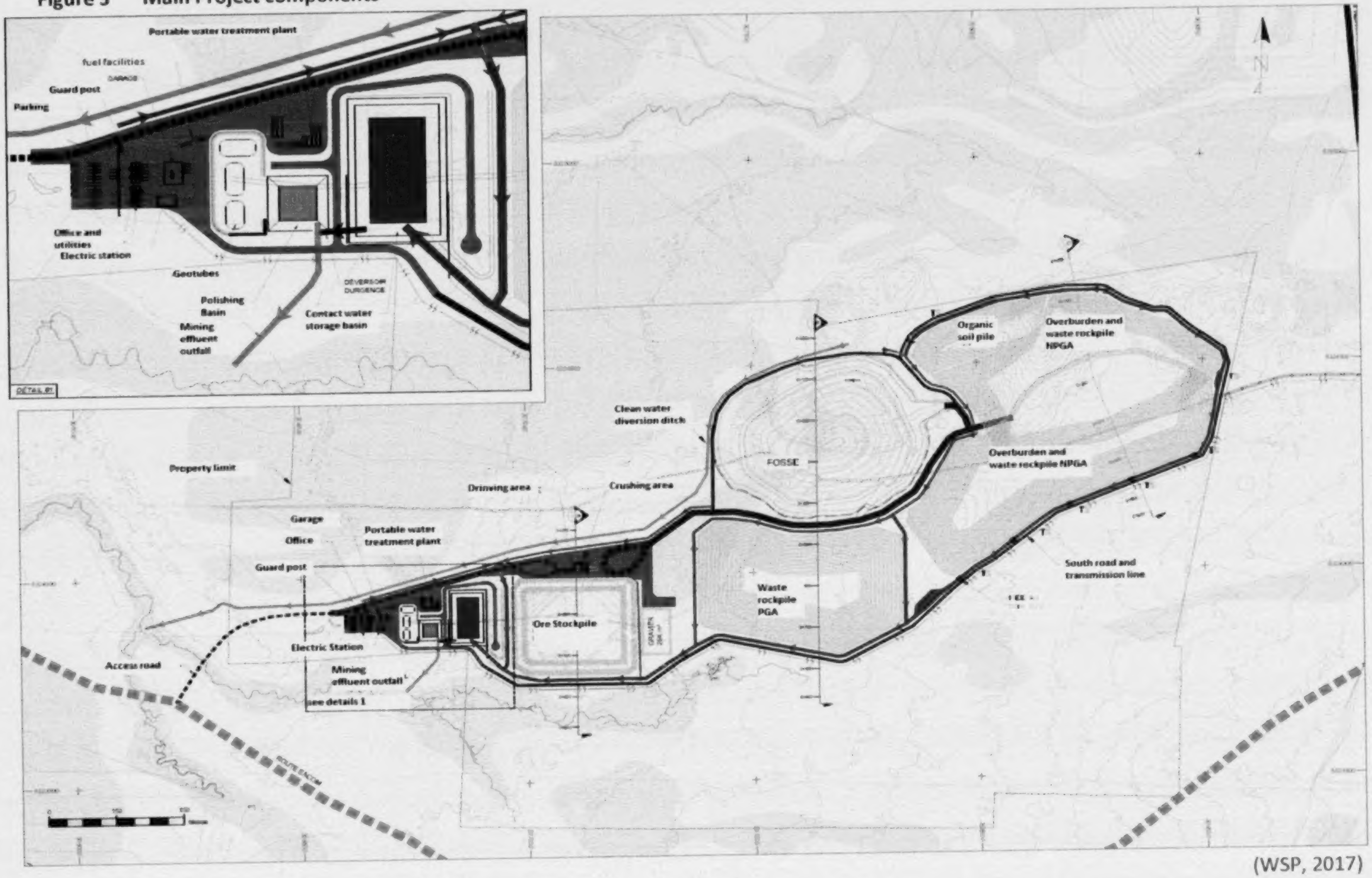
2.2 Project Components

The components of the Project that are the subject of this environmental assessment are shown at Figure 3 and are briefly described below.

Pit and crushing station

The mine would consist of an open-pit from which approximately 15 Mt of ore, waste rock and overburden would be extracted. The pit would be approximately 470 m long by 385 m wide and it would have a maximum depth of around 165 m. A crushing station would be set up to the southwest of the pit and would include a conveyor that would transport the ore to the truck loading area. The ore would be transported to the Goldex mine processing plant for processing. The crusher would be covered by a partially closed shelter to protect it against inclement weather and to control dust emissions and reduce noise levels.

Figure 3 Main Project components


Portable water treatment plant
fuel facilities
GARAGE
Guard post
Parking
Office and utilities
Electric station
Geotubes
Polishing Basin
Mining effluent outfall
Contact water storage basin
DEVERSOIR DURGENCE
DETAIL 01
Clean water diversion ditch
Property limit
Drinving area
Crushing area
FOSSE
Organic soil pile
Overburden and waste rockpile NPGA
Overburden and waste rockpile NPGA
Garage
Office
Portable water treatment plant
Guard post
Waste rockpile PGA
Ore Stockpile
South road and transmission line
Access road
Electric Station
Mining effluent outfall
see details 1
ROUTE ENCON
N

(WSP, 2017)

Storage areas

The Proponent has planned to develop six storage areas for ore, waste rock, overburden, organic soil and gravel. Table 2 below presents the areas' characteristics: volume in million cubic metres, height in metres and the footprint area in square metres.

Table 2 Main characteristics of the storage areas

Storage areas	Volume (Mm^3)	Height (m)	Footprint area (m^2)
Organic soil pile	0.15	9	29,966
Overburden pile	1.72	20	175,945
Non-potentially acid-generating waste rock pile	1.81	28	131,439
Potentially acid-generating waste rock pile	2.01	34	118,000
Ore pile	0.93	20	65,000
Granular material (gravel) pile	0.03	N/A	8,000

(WSP, 2015a)

Water management facilities

Mine water[1] collection ditches would collect the water passing through the mine site for treatment. There are plans for a 15,150-m3 storage basin. The Proponent has also planned for a 2,900-m3 polishing basin to gather the treated water before it is discharged into the mining effluent. A portable plant would enable water from mine activities to be treated in order to reduce suspended solids and other contaminants that might affect water quality in the receiving environment. The mining effluent would be localised in watercourse No. 3.

To prevent clean water from the receiving environment north of the pit from coming into contact with the mine site, a clean water diversion channel would be built and would enable this water to be discharged into watercourse No 3.

Roads

The Proponent has planned to develop 6.2 kilometres of road for traffic on the mine site and a 230-m access road to connect the mine site to a road that would be built by the Eacom Timber Company to the south of the Project site. This road would be used to transport the ore to the Goldex plant. The proposed Eacom Timber Company road received authorization from the Government of Quebec in December 2016, but its construction does not fall within the scope of the Project environmental assessment. However, the Agency would take it into account in its analysis of cumulative effects.

Transmission line

The estimated 750 kW of electrical power required would come from the Hydro-Québec grid. The site would be connected to the 25-kV transmission line that runs along the Lake Sabourin Road. The Proponent would build a 3 kilometres aerial connection line to connect the mine to the grid that would follow the southern boundary of the planned infrastructure. Transformers would be added to power the facilities with 600 V.

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[1] All water that has come into contact with mine site components and associated infrastructure.

Other facilities

There are a number of other facilities planned, including a guard post, administrative buildings, a mechanical workshop, fuel facilities and a portable crusher for producing granular material.

The Akasaba West mine access road would have a guard post to control entry to the mining site. An area with administrative buildings for the workers would be set up close to the guard post. These would consist of site trailers housing personnel offices and facilities for the mine workers including showers and sanitary facilities.

A machinery maintenance facility would be set up to the west of the administrative buildings near the guard post. This facility, measuring approximately 15 m by 20 m, would include a garage and storage space for parts and supplies. The garage would include a service bay for minor mechanical maintenance.

Two double-walled 25,000-L diesel tanks are planned for the mine site to provide for the equivalent of four workdays of autonomy. The fuel would be delivered by tanker truck. Total consumption of diesel fuel over the life of the Project is estimated at 19.1 ML.

The Proponent plans on using a portable crusher to break up non-potentially acid-generating waste rock to produce granular materials for the construction and maintenance of roads during the operation phase. This crusher would be generator-powered.

Existing processing plants and tailings management facilities

The Proponent plans on using the Goldex plant to process the ore and the Manitou site to store its mine tailings. These facilities do not fall within the scope of the Project environmental assessment because they are already in operation and have received authorization in the form of a certificate of authorization issued by the Government of Quebec.

At the Goldex plant, the ore would undergo a crushing step, followed by a gravimetric gold recovery step and a flotation of sulphide concentrate containing gold and copper step. The gold concentrate recovered through the gravimetric method would then be processed at the Goldex plant, while the sulphide concentrate would be transported to the LaRonde plant for processing.

Part of the tailings generated by the Akasaba West ore processed at the Goldex plant would be sent to the Manitou tailings management facility, and part would be backfilled into the underground workings of the Goldex mine.

The Manitou site is a former tailings management facility located approximately 15 kilometres southeast of Val-d'Or, arising as a result of the mining of a zinc and copper deposit between 1942 and 1979 that generated close to 11 Mt of acid-drainage-causing tailings. The site is the subject of a joint project between the Proponent and the Quebec Ministry of Energy and Natural Resources. The goal of this Manitou-Goldex Project is to rehabilitate the Manitou site by using tailings from the Goldex mine. The tailings from the Goldex mine are sulphide-free and cyanide-free and have the potential to neutralize the acidity of the interstitial water in the tailings on the Manitou site. The Akasaba West tailings, like the Goldex mine tailings, would have acid neutralizing potential and could help rehabilitate this tailings management facility.

2.3 Project Activities and Timetables

The activities required to carry out the Project are described in Table 3 by phase of the Project's lifecycle. From the construction phase to the post-closure phase, the entire Project could last a little over 16 years.

Table 3 Temporal boundaries by Project activity

General activity by project phase	Detailed activity for each general activity by project phase
Site preparation and construction: Lasting one year (Year 1)	
Site preparation	• Tree clearing, overburden stripping, excavation and earthwork for the installation of buildings, mine equipment, the pit, the access road to the Eacom road and storage areas for ore, waste rock and overburden; • Set-up of the workers' site trailers and other temporary infrastructure or facilities, including access roads.
Construction	• Construction of buildings, supporting infrastructure (maintenance garage, administrative buildings, crusher foundation, etc.) and the transmission line; • Development of the storage areas for the waste rock, overburden and ore piles; • Establishment of a water management system (ditches, basins, booms or sills to slow the flow of water, water treatment system); • Installation of water pumping systems for pit dewatering; • Construction of access roads and roads to travel around the mine site; • Transportation, use and management of explosives by a supplier;
Construction equipment—Transportation and traffic	• Use, maintenance and movement of the equipment needed on site (bulldozers, drilling machines, excavators, etc.); • Road transportation of construction materials and equipment and workforce traffic.
Waste management and disposal	• Handling, management and transportation of waste and hazardous materials for disposal, recycling and reuse.
Operation: Lasting six years (Years 1 to 6)	
Mine operation and tailings management activities	• Preparation for mining: blasting, setting aside overburden and waste rock to prepare the pit. The stripping of the organic soil would entirely take place during the pre-production phase, while the stripping of other unconsolidated deposits would take place up to the second year of operation. • Drilling, blasting and extraction of the ore and waste rock. The extraction rate is 3.65 Mt/year for four years; • Water pumping for pit dewatering (pit and 3 peripheral wells; • Crushing the ore until it measures less than 150 mm before loading it onto trucks; • Handling and stockpiling ore, waste rock and overburden; • Transporting the ore by truck from the mine to the Goldex plant via the Eacom road (80 loads a day); • Use and management of explosives by a supplier.
Waste management	• Solid waste would be sorted at the source (recyclables, putrescible waste and non-

and disposal	recyclable domestic waste). A program to reduce, reuse, recover, recycle, reclaim and dispose of waste would be established; • Wood as well as iron and copper would be sent respectively to the Val-d'Or Enviroparc and recovered by a local contractor; • Hazardous waste would be kept in a storage site in compliance with the requirements of the Quebec Regulation respecting hazardous materials. Hazardous materials include, among others, used oil and grease from fixed and mobile machinery, aerosol cans, oil filters, empty oil containers, cleaning solvents for mechanical parts and empty explosives containers. Hazardous waste would be briefly stored on site in a designated container then collected by a specialized contractor. The empty explosives containers would be recovered and handled by the explosives supplier.
Water management	• Domestic wastewater would be stored in three reservoirs then handled by a specialized company; • All of the mine water from the Akasaba West site would be collected and treated as needed before being discharged into the environment. The mining effluent would be discharged into watercourse No. 3; • Tailings slurry from the water treatment plant and the polishing pond would be removed by a contractor and placed on the potentially acid-generating waste rock pile or in a duly authorized site; • Clean water that has not been in contact with the mine site would be diverted to a discharge point downstream of the mine effluent in stream No. 3. • Monitoring of mine effluent and its effects on the receiving environment at the intervals and duration required by existing regulations (*Metal Mining Effluent Regulations* and Quebec's Directive 019 on the mining industry)
Mining equipment	• Use, maintenance and movement of heavy equipment and vehicles. The expected equipment is as follows: six mine trucks (40- to 70-t capacity), two excavators, two drilling machines, three wheel loaders, water and fuel tanker trucks, one grader, one snow plow and sander, one bulldozer (track or wheel).
Decommissioning: Lasting two years (Years 5 and 6)	
Dismantling of facilities and supporting infrastructure	• Dismantling of supporting infrastructure and buildings and the transmission line would be under the contractors' responsibility; • All the service equipment such as tanks, pipes and pumps would be emptied and cleaned. The pipes in good condition would be recovered by the contractor. Those who are no longer useful would be disposed of in compliance with the provisions in the Quebec Regulation respecting the landfilling and incineration of residual materials; • Floor slabs and foundations soiled with hydrocarbons would first be decontaminated before being backfilled.
Mining equipment—transportation and movement	• Use, maintenance and movement of heavy machinery and vehicles;
Waste management and disposal	• Waste and hazardous materials management. Materials generated during the dismantling of the facilities would be managed in accordance with the principles of reducing, reusing, recycling and reclaiming.
Site clean-up and rehabilitation	• Flooding of the pit(16 years) and construction of a spillway; • Scarification of travel routes, the parking lot, storage areas as well as the footprint of dismantled infrastructure to facilitate revegetation;

	• Slope stabilization and seeding of non-potentially acid-generating waste rock and overburden piles; • Containment of potentially acid-generating waste rock piles; • Grading and covering the storage area foundation once the ore stockpile is depleted; • Restoration of water management ponds. Tailings slurry from the water treatment plant and the polishing pond would be placed in the pit; • Restoration of access roads and roads used to travel around the site: all roads on the mine site would be scarified to facilitate revegetation; • Collection of water and treatment, if needed.
Post-closure: Lasting 10 years starting at the end of the Project's 6th year (Years 7 to 16)	
Follow-up program	• Monitoring the integrity of remaining structures on the site, including waste rock and unconsolidated deposit piles, the protective berm around the flooded pit and the permanent ditches channeling water to the pit; • Agronomic monitoring of revegetated areas through visual assessment of parameters including plant condition, percentage of areas showing vegetative recovery, soil erosion, etc.; • Monitoring water quality by taking samples from the pit or run-off collection pond in accordance with the frequency and duration set out in *Metal Mining Effluent Regulations* and the Quebec Directive 019 on the mining industry; • For groundwater monitoring, a monitoring network would be installed around at-risk areas, such as waste rock, the fuel storage site, crushing station and electrical substation site.

The mine site decommissioning would be subject to the requirements in the Quebec Guidelines for Preparing a Mining Site Rehabilitation Plan and General Mining Site Rehabilitation Requirements, Directive 019 on the mining industry and any other applicable provisions such as the Soil Protection and Rehabilitation of Contaminated Sites Policy and the Land Protection and Rehabilitation Regulation.

3 Project justification and alternatives

3.1 Purpose of Project

The Proponent indicated that the Project's objectives are to extract approximately 5.1 Mt of gold and copper ore over a four-year period, maximizing the use of the Goldex mine concentrator and increasing the lifespan of the Goldex mine. The Proponent indicates that this Project would maintain the economic benefits for Quebec and the Abitibi-Témiscamingue region. Ore would be transported to the plant for six years.

3.2 Alternative Means of Carrying Out the Project

In the environmental impact statement, the Proponent assessed alternative means of carrying out a number of project components that were technically and economically feasible, such as ore extraction and transport, location of the waste rock, ore and unconsolidated deposit piles as well as the method for containing the potentially acid-generating waste rock. When there were a number of alternative means that were technically and economically feasible, the Proponent looked at the social and environmental advantages and disadvantages for each in order to choose, in its opinion, the best solution.

A summary of this assessment is provided below and Appendix E contains the details of the assessment according to technical, environmental, economic and social criteria identified by the Proponent.

3.2.1 *Ore extraction*

The Proponent considered two ore extraction methods—open-pit mining and underground mining—using technical and economic criteria.

The Proponent chose open-pit mining given that the mineralized zone of the deposit with the highest content is on the surface. This method would be more profitable given the lower capital costs. In addition, the Proponent`s studies demonstrated that underground mining would result in the loss of minable resources on the surface.

3.2.2 *Ore transport*

The Proponent examined three alternative means for transporting the ore between the pit and the Goldex mine concentrator that it deemed technically and economically feasible (see Table 4 and Figure 4). They are the Route 117 alternative, the Manitou alternative and the Eacom logging road alternative, which was first considered by the Proponent in December 2016.

The Route 117 alternative uses the Lake Sabourin Road, then Route 117 toward Val-d'Or up to the Goldex mine. The Proponent indicates that representatives from the Quebec Ministry of Transport, Sustainable Mobility and Transport Electrification (MTMDET), the town of Val-d'Or and people living on the lakes in the area expressed concerns about dust and the risk of accidents stemming from increased traffic on Lake Sabourin Road. No loss of wildlife habitat is associated with this existing route.

The Manitou alternative requires the construction of a new, approximately 6.7 kilometres road west of the mine to connect to the Manitou Road leading to the Goldex mine. The Proponent estimates that this alternative would have a potential for more significant effects than the alternative with the existing Route 117 on migratory birds and woodland caribou due to the loss of forest habitat and wetland environments from the new road's right-of-way.

The third alternative is using the Eacom company's logging road that passes south of the Project site to bring the timber to the Val-d'Or sawmill. More specifically, it is the western section of this road (8.5 kilometres) that could be used to bring the Akasaba West ore to the Goldex plant. It would consist of a 30-metre-wide unpaved road. A 230-m access road would be constructed to connect the mine site to this road.

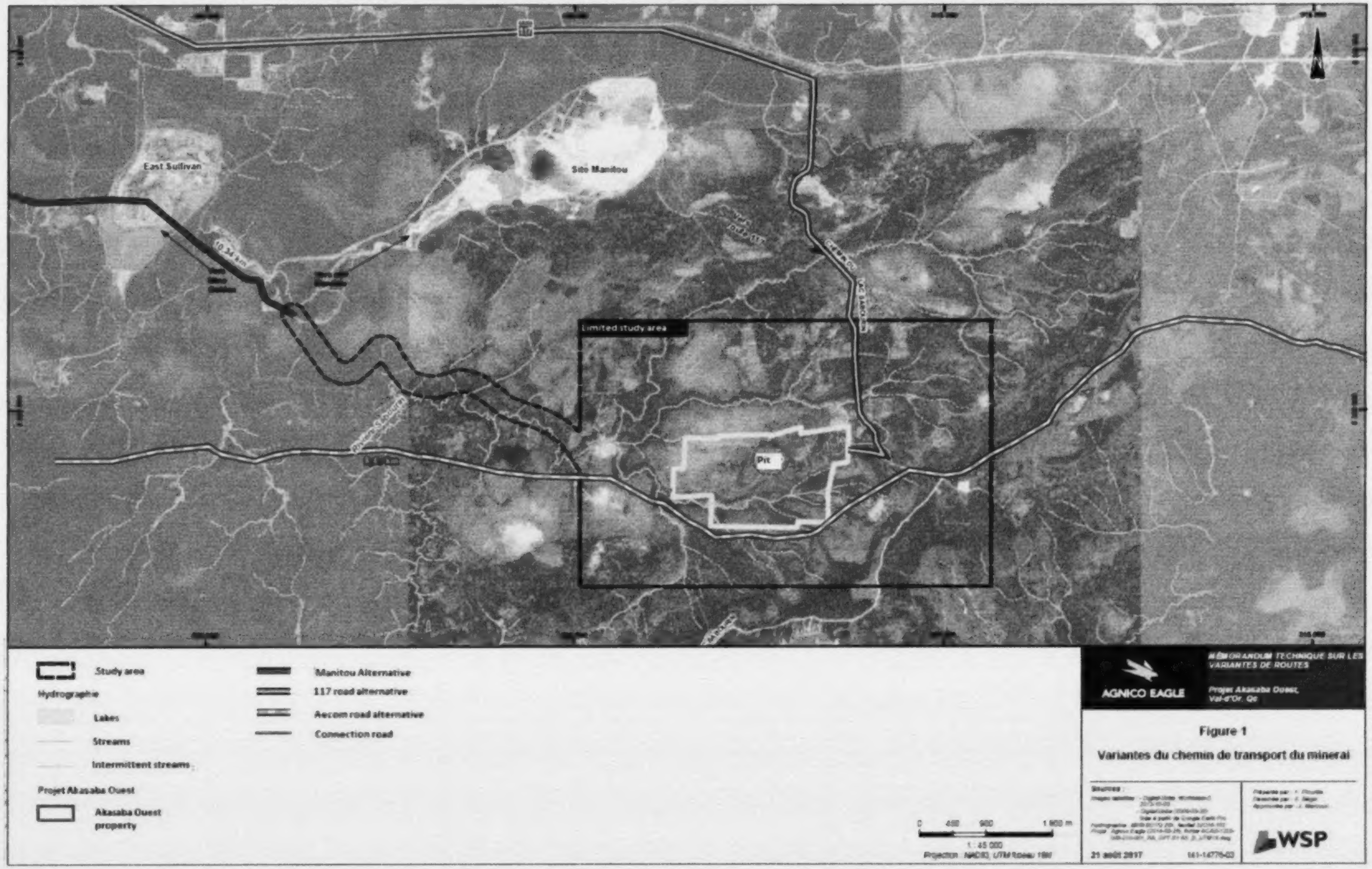
In February 2017, the Proponent announced its decision to use the Eacom company logging road and to remove the Manitou alternative from the Project. This decision allows the Proponent to limit the Project's effect on migratory birds and woodland caribou by avoiding the habitat loss associated with the construction of a new road.

Table 4 Characteristics of alternative ore transportation routes

Item of comparison	Route 117 alternative	Manitou alternative	Eacom road (chosen alternative)
Context and length	31-km trip on existing roads, including Lake Sabourin Road.	23-km trip with a new 6.7-km road connecting to an existing road west of the mine site.	31-km trip on existing roads, including 9 km on the Eacom road already authorized by the Government of Quebec.
Effect on wetlands	Not applicable for the Project.	17.2-ha encroachment	Not applicable for the Project.
Effect on terrestrial environments	Not applicable for the Project.	6.4-ha encroachment.	Not applicable for the Project.
Watercourses crossed	Not applicable for the Project.	8 streams crossed.	Not applicable for the Project.
Social acceptability	Many concerns expressed by representatives from MTMDET, the municipality of Val-d'Or and Lake Bayeul and Lake Sabourin residents concerning safety and dust generated on Lake Sabourin Road.	Fewer concerns raised compared to the Route 117 alternative. The use of Lake Sabourin Road during the Project's construction phase raised concerns for users of this road regarding safety and dust.	Concerns regarding the effects on caribou. During the mine site construction phase, the use of Lake Sabourin Road might be avoided since the western portion of the Eacom road would be built. Road already authorized by the Government of Quebec.
Disturbance to wildlife during ore transport	Farther from the Val-d'Or caribou biodiversity reserve.	Intermediate distance from the Val-d'Or caribou biodiversity reserve.	Closest to the Val-d'Or caribou biodiversity reserve.

(WSP 2017)

Figure 4 Ore transportation route alternatives and the Eacom logging road


East Sullivan
Site Manitou
Limited study area
Pit
10.34 km
Study area
Hydrographie
Lakes
Streams
Intermittent streams
Projet Akasaba Ouest
Akasaba Ouest property
Manitou Alternative
117 road alternative
Aecom road alternative
Connection road
0 450 900 1 800 m
1 : 45 000
AGNICO EAGLE
MÉMORANDUM TECHNIQUE SUR LES VARIANTES DE ROUTES
Projet Akasaba Ouest, Val-d'Or, Qc
Figure 1
Variantes du chemin de transport du minerai
Sources :
21 août 2017
WSP

(WSP, 2017)

3.2.3 *Location of waste rock, ore and unconsolidated deposit piles*

The Proponent analyzed three (A1, A2 and A3) alternative configurations and locations of storage areas for waste rock, ore and unconsolidated deposits (organic soil and overburden) that can be seen in figures 5, 6, and 7. These alternatives are described at Appendix F. The key characteristics are as follows:

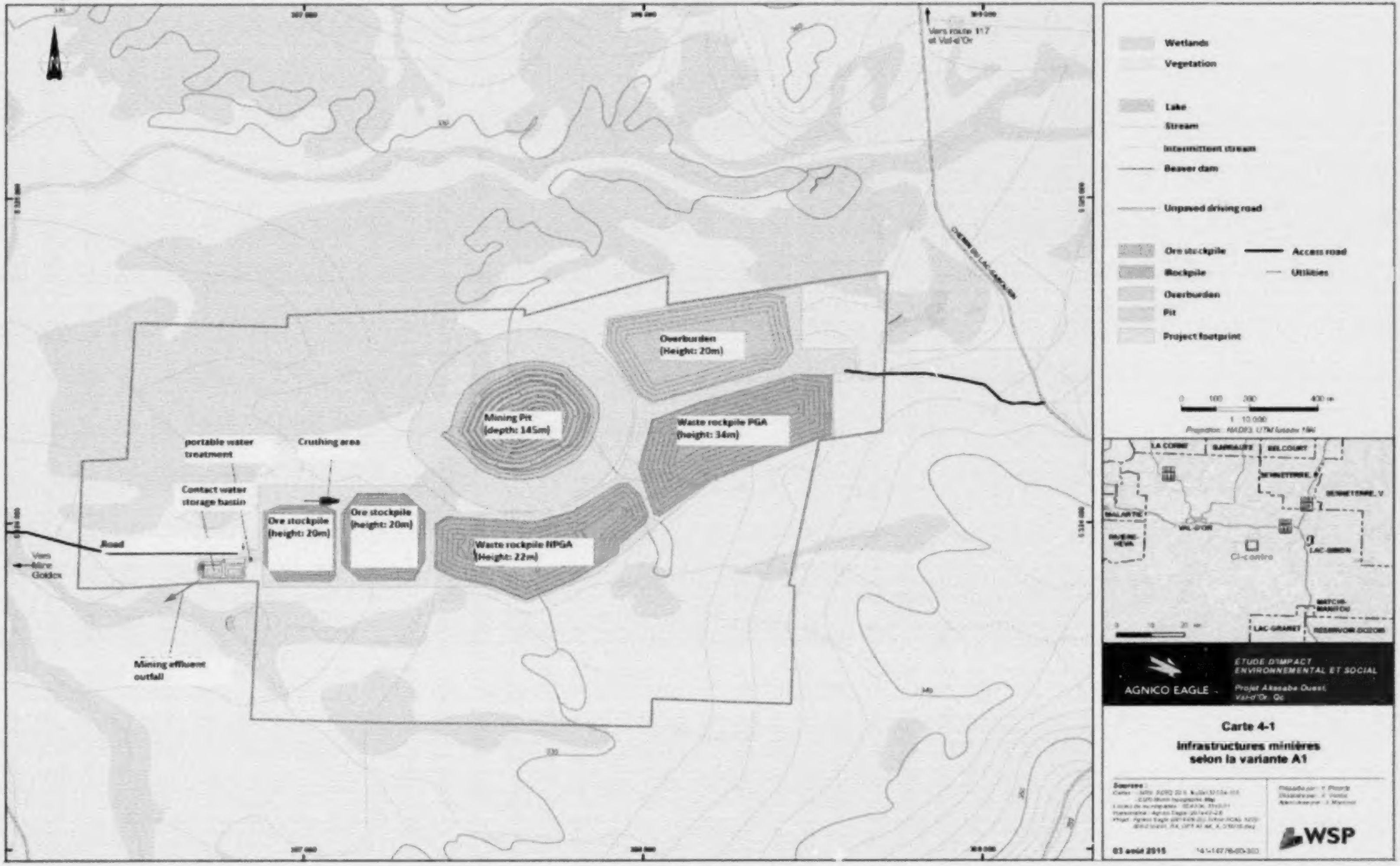
- The unconsolidated deposit storage areas are located northeast of the pit in all three alternatives;
- Alternative A1 is characterized by two waste rock storage areas to the south and southeast of the pit and two ore storage areas located next to each other to the southwest of the pit;
- Alternative A2 would have two waste rock storage areas to the south of the pit and two ore piles to the southwest and west of the pit;
- Alternative A3 would have two waste rock storage areas to the south and southeast of the pit and one ore storage area southwest of the pit.

For all three alternatives, the material is transported similar distances by truck, the piling method is the same and the topography of the land is identical. The Proponent conducted a comparative analysis based on the following environmental criteria: disturbance of natural terrain, distance from watercourses and wetland encroachment.

The Proponent chose alternative A3 because the layout of the storage areas avoids any encroachment on the large wooded bog to the northwest of the pit and disturbance to the natural terrain is minimized. Plus, alternative A3 maintains a distance of at least 60 m between the storage areas and the watercourse 3 located to the south of the mine.

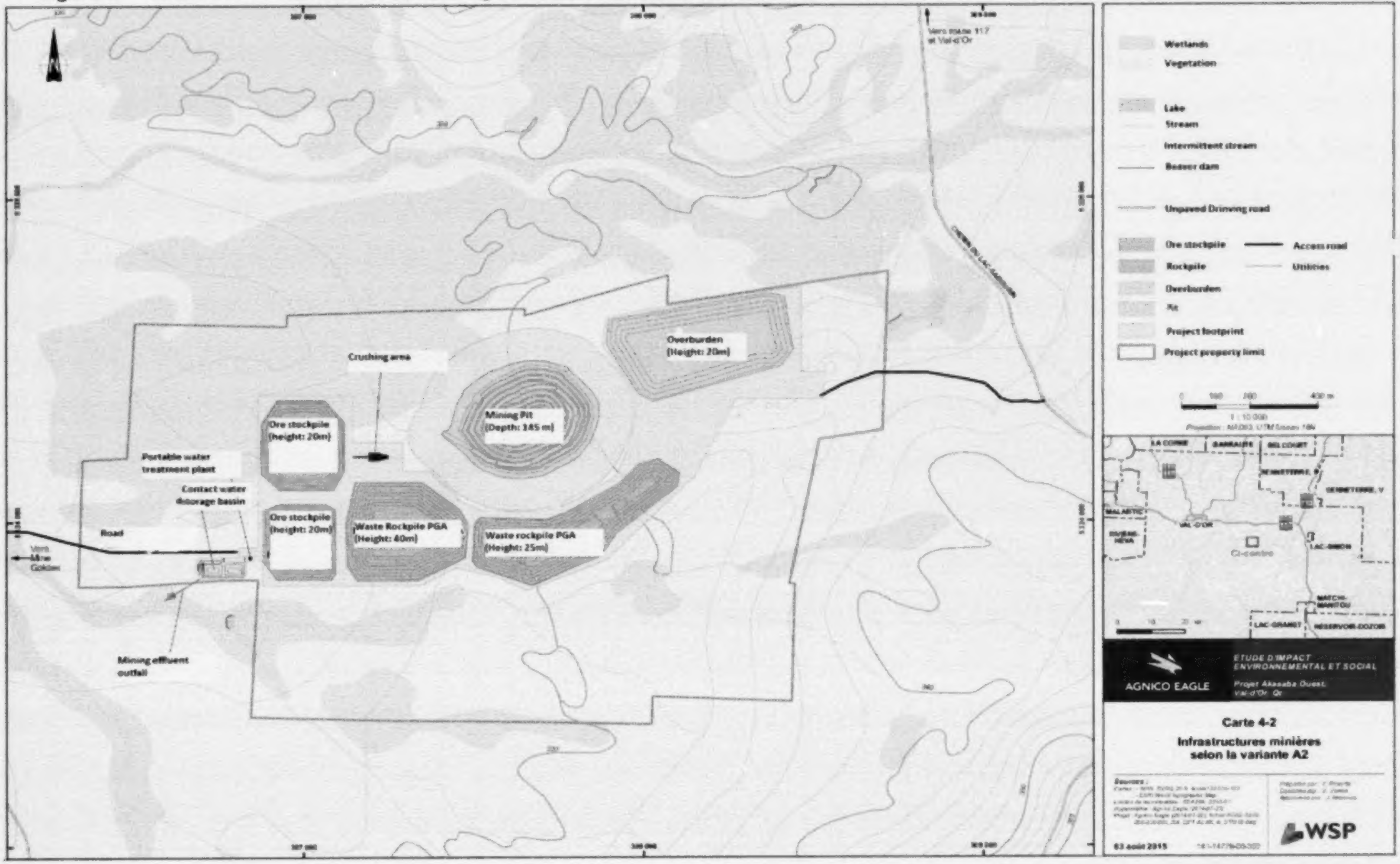
Alternative A1 was not chosen because the storage areas are less than 60 m from the watercourse to the south of the pit. Alternative A2 was eliminated because the storage areas encroach on the large bog to the northwest of the pit.

Figure 5 Alternative A1—location and configuration of the waste rock, unconsolidated deposit and ore storage areas


Vers route 117 et Val-d'Or
Overburden (Height: 20m)
Mining Pit (depth: 145m)
Waste rockpile PGA (height: 34m)
portable water treatment
Crushing area
Contact water storage basin
Ore stockpile (height: 20m)
Ore stockpile (height: 20m)
Waste rockpile NPGA (Height: 22m)
Road
Vers Mine Goldex
Mining effluent outfall
Wetlands
Vegetation
Lake
Stream
Intermittent stream
Beaver dam
Unpaved driving road
Ore stockpile
Rockpile
Overburden
Pit
Project footprint
Access road
Utilities
0 100 200 400 m
1 : 10 000
LA CORNE
BARRAUTE
BELCOURT
MALARTIC
VAL-D'OR
Ci-contre
LAC-SIMON
LAC-GRANET
RESERVOIR DOZOIS
AGNICO EAGLE
ÉTUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
Projet Akasaba Ouest, Val-d'Or, Qc
Carte 4-1
Infrastructures minières selon la variante A1
Sources :
03 août 2015
WSP

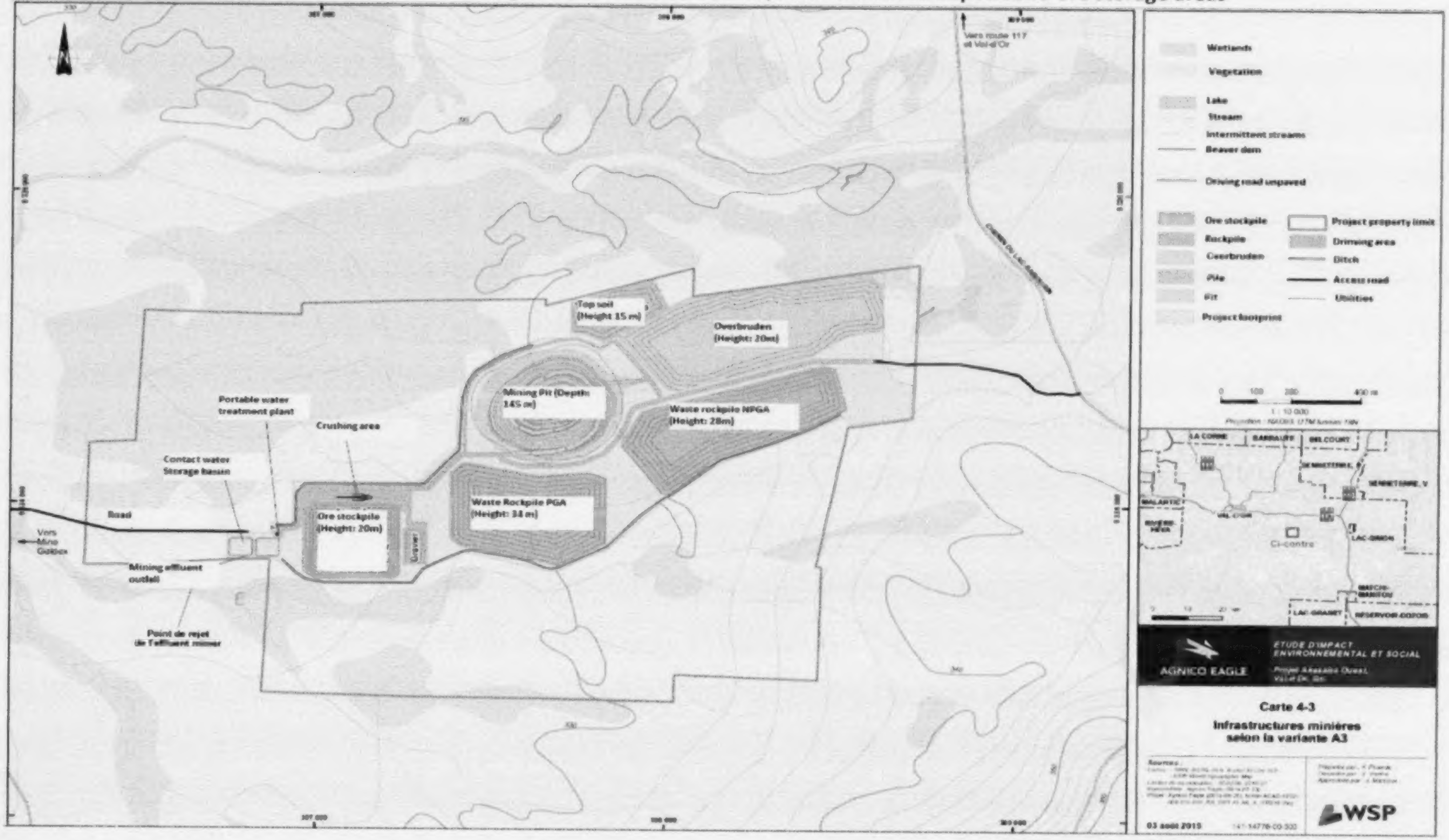
(WSP, 2015a)

Figure 6 Alternative A2—location and configuration of the waste rock, unconsolidated deposit and ore storage areas


Vers route 117 et Val-d'Or
Wetlands
Vegetation
Lake
Stream
Intermittent stream
Beaver dam
Unpaved Drinving road
Ore stockpile
Access road
Rockpile
Utilities
Overburden
Pit
Project footprint
Project property limit
Overburden (Height: 20m)
Crushing area
Mining Pit (Depth: 145 m)
Ore stockpile (height: 20m)
Portable water treatment plant
Contact water storage bassin
Ore stockpile (height: 20m)
Waste Rockpile PGA (Height: 40m)
Waste rockpile PGA (Height: 25m)
Road
Vers Mine Goldex
Mining effluent outfall
Val-d'Or
Malartic
Lac-Simon
AGNICO EAGLE
ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
Projet Akasaba Ouest, Val-d'Or, Qc
Carte 4-2
Infrastructures minières selon la variante A2
03 août 2015
WSP

(WSP, 2015a)

Figure 7 Alternative A3— location and configuration of the waste rock, unconsolidated deposit and ore storage areas


Vers route 117 et Val-d'Or
Top soil (Height 15 m)
Overbruden (Height: 20m)
Mining Pit (Depth: 145 m)
Waste rockpile NPGA (Height: 28m)
Portable water treatment plant
Crushing area
Contact water Storage basin
Road
Vers Mine Goldex
Ore stockpile (Height: 20m)
Gravel
Waste Rockpile PGA (Height: 34 m)
Mining effluent outfall
Point de rejet de l'effluent minier
Wetlands
Vegetation
Lake
Stream
Intermittent streams
Beaver dam
Driving road unpaved
Ore stockpile
Rockpile
Overbruden
Pile
Pit
Project footprint
Project property limit
Drinking area
Ditch
Access road
Utilities
0 100 200 400 m
1 : 10 000
LA CORNE
BARRAUTE
BELCOURT
SENNETERRE, P
SENNETERRE, V
MALARTIC
RIVIÈRE-HEVA
VAL-D'OR
Ci-contre
LAC-SIMON
MATCHI-MANITOU
LAC-GRANET
RÉSERVOIR-DOZOIS
0 10 20 km
AGNICO EAGLE
ÉTUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
Projet Akasaba Ouest, Val-d'Or, Qc
Carte 4-3
Infrastructures minières selon la variante A3
Sources :
03 août 2015
WSP

(WSP, 2015a)

3.2.4 *Method for containing potentially acid-generating waste rock*

When the mine closes, the potentially acid-generating waste rock storage areas would be contained in order to minimize the release of contaminants into the environment. Containment allows for the reduction of sulphide oxidation by minimizing waste rock contact with air and water, the reduction of the dissolution of oxidation products and the reduction leachate transport by diverting water likely to infiltrate and migrate through the waste rock. The Proponent assessed three alternative methods for containing potentially acid-generating waste rock using 9 criteria. The alternatives are as follows:

Alternative 1: Backfilling and flooding the waste rock in the pit

The first alternative involves flooding and backfilling all the potentially acid-generating waste rock in the pit. According to the Proponent, this alternative is recognized as an effective method for preventing sulphide oxidation, thereby reducing acid generation and preventing metal leaching. It involves moving 2.07 Mm3 of potentially acid-generating waste rock into the pit. The total space available in the pit is evaluated at 5.53 Mm3 up to an elevation of 330 m (natural terrain surface level). The pit could thus contain all the potentially acid-generating waste rock, but would not be completely backfilled. In order for this method to be effective in preventing sulphide oxidation, the potentially acid-generating waste rock must remain submerged at all times.

Based on the area's hydrogeological context, the Proponent estimates that it would take 16 years for water in the pit to reach an elevation of 327.5 m (Richelieu Hydrogéologie, 2015). To ensure the pit is fully flooded at all times, the maximum water level in the pit must be maintained at 325 m, allowing storage of 5.12 Mm3 of potentially acid-generating waste rock.

Additional hydrogeological and geochemical studies were conducted for the backfilling and flooding the pit alternative. They concluded that the potential groundwater and surface water contamination risk would be low. The Proponent indicates that additional studies are underway to validate, among other things, the methodology for filling the pit, slope stability, health and safety considerations and cost optimization. The results of these studies could lead the Proponent to reconsider this alternative when making its final choice at the time of the implementation of the restoration plan. The Proponent indicates that it has reached an agreement with MERN to review the restoration plan in two to three years to include a detailed assessment of this alternative where potentially acid-generating waste rock is flooded in the pit.

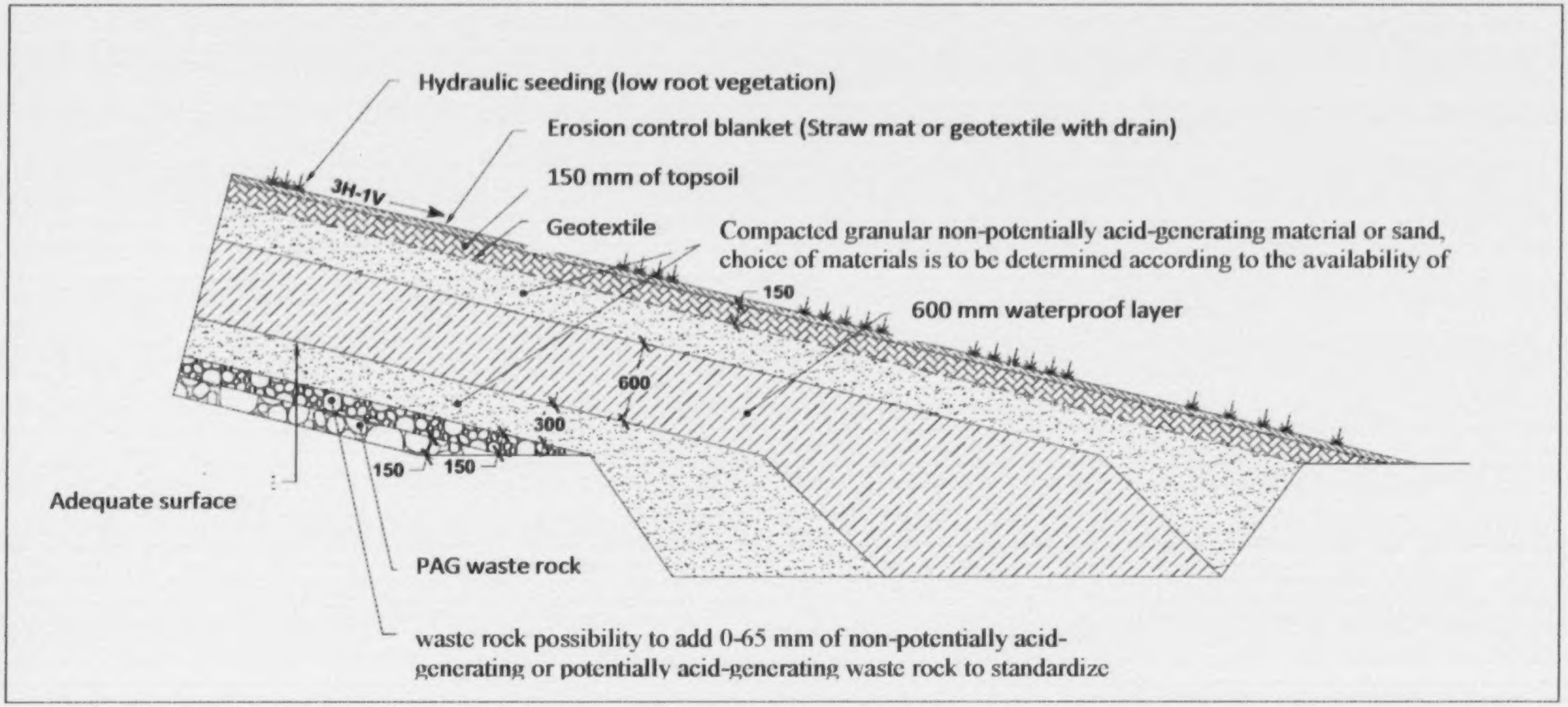
Alternative 2: Reprofiling the waste rock pile, multilayer covering and seeding

The second alternative aims to soften the potentially acid-generating waste rock pile slopes and add a multilayer covering to limit sulphide oxidation and metal leaching. In this second alternative the covering generally consists of a support layer of sand or gravel, which is topped by a low permeability layer. This low permeability layer, often composed of silt, till or tailings, limits oxygen infiltration because of its high water content and limits water infiltration because of its low hydraulic conductivity. To promote lateral rather than vertical drainage of precipitation and to prevent the low permeability layer from drying out, a drainage layer composed of sand and gravel is placed over top. Finally, a layer that is favourable to vegetation establishment is placed on the surface. (Figure 8)

The installation of a multilayer covering requires long-term monitoring of the covering's integrity. Furthermore, given the high number of materials, this type of covering's performance can be affected by any deficiencies in the material placement or construction process. It is therefore essential that there be an adequate quality assurance program.

This method requires studies to establish the provenance of construction materials and determine the physical properties of the planned covering materials (overburden from the Akasaba West site, Goldex tailings, and esker materials).

Figure 8 Reprofiling, multilayer cover and seeding


Hydraulic seeding (low root vegetation)
Erosion control blanket (Straw mat or geotextile with drain)
150 mm of topsoil
Geotextile
Compacted granular non-potentially acid-generating material or sand, choice of materials is to be determined according to the availability of
3H-1V
150
600 mm waterproof layer
600
300
150
150
Adequate surface
PAG waste rock
waste rock possibility to add 0-65 mm of non-potentially acid-generating or potentially acid-generating waste rock to standardize

(WSP, 2015b)

Alternative 3: Reprofiling the waste rock pile, covering it with a geomembrane and seeding

The third alternative involves reprofiling the waste rock pile slopes and installing a polyethylene membrane to create an impermeable barrier using the following materials (bottom to top): non-potentially acid-generating waste rock, sand, a geomembrane, separating geotextile, and a layer of organic soil that is favourable to revegetation.

The polyethylene membrane is an effective waterproofing method because it isolates the waste rock from the environment and limits water from infiltrating into the pile, thereby preventing sulphide oxidation and metal leaching. "This covering method is recognized and generally used for covering hazardous materials or high-risk tailings."[2]

Alternative selected

The Proponent used nine criteria in its comparative analysis of the advantages and disadvantages of the alternative means for containment in order to select the option that would best control acidification. The criteria are the following: the alternative's effectiveness and reliability with respect to acid mine drainage and neutral mine drainage, the risk of potential effects on the environment, the complexity of the design and construction, social acceptability of authorities and the availability of case studies, integration into the landscape and risk to the community, the possibility of progressive restoration, the possibility of reusing/recycling/reclaiming materials, the cost of the restoration work and post-restoration maintenance and follow-up.

At the end of its comparative analysis, the Proponent concluded that the multilayer covering is the most effective option for containing potentially acid-generating waste rock and presents fewer environmental risks. The Proponent states that this alternative is very well documented in the literature and there are many case studies available from which to base the design and construction.

3.2.5 *Comments received*

Environment and Climate Change Canada raised some questions about the management of water seeping from non-potentially acid-generating waste rock and overburden; the Proponent therefore changed the configuration of the waste rock, ore and unconsolidated deposit storage areas to ensure all mine water is collected (Figure 3).

With respect to the alternative means for containing potentially acid-generating waste rock, Environment and Climate Change Canada mentioned that choosing an alternative can be complex because the effectiveness of containment methods can significantly vary from site to site and it is important for the Proponent to continue its research to ensure that the chosen containment method is the most effective for its site.

The First Nation of Kitcisakik and the First Nation of Lac Simon Consel asked if it would be possible to study the alternative of backfilling and flooding of the waste rock in the pit. The Proponent responded that it did not prefer that alternative because there were uncertainties surrounding the risk of contaminating the groundwater. In order to meet MERN requirements regarding open-pit mining, the Proponent would include an analysis of the possibility of moving the waste rock back into the pit when the restoration plan is updated. Studies are still underway to make a final decision on this alternative.

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[2] WSP, 2015, Environmental and Social Impact Assessment, page 12.

3.2.6 *Agency's conclusions regarding the alternatives selected*

The Agency reviewed the Proponent's assessment of the alternatives and its responses to the concerns raised during consultations with Indigenous peoples and the public. For each project component listed in the environmental impact statement guidelines, the Proponent conducted a comparative analysis of the technically and economically feasible alternatives and took technical, social, environmental and economic criteria into account when selecting its preferred alternatives.

With respect to the potentially acid-generating waste rock containment in the pit alternative, the Agency notes that the Proponent would continue to conduct studies to ensure that the containment method selected is the most effective option for the Project site. Among other things, the Proponent has to consider the possibility of completely or partially filling the pit with waste rock in accordance with MERN requirements. The Proponent is committed to keeping the two Algonquin First Nations apprised of the findings of its studies. If the Proponent were to choose to implement this alternative, it would have to ensure that a groundwater and surface water monitoring program is in place to demonstrate that it does not cause contamination.

The Agency is satisfied that the Proponent has sufficiently assessed alternative means of carrying out the project for the purposes of the environmental assessment under *Canadian Environmental Assessment Act, 2012*.

4 Consultation Activities and Advice Received

4.1 Indigenous consultation

4.1.1 *Indigenous consultation conducted by the Agency*

The federal government has a duty to consult Indigenous Peoples and, where appropriate, to accommodate, when it has knowledge that its proposed conduct might adversely impact potential or established Indigenous or treaty rights. Indigenous consultation is also undertaken more broadly as an important part of good governance, valuable policy development and sound decision making.

In addition to the federal government's broader obligations, *Canadian Environmental Assessment Act, 2012* requires that all federal environmental assessments consider the impact on Indigenous peoples of any project-related effects on health and socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance. In order to fulfill the Crown's consultation obligations, the Agency integrated Indigenous consultations in the environmental assessment process.

For the purposes of this environmental assessment, the Agency served as coordinator for Crown consultations with First Nations.

The Project would be located in the "southern zone" of the territory covered by the *James Bay and Northern Quebec Agreement*, in Category III lands, public lands in Quebec, where the Crees have certain exclusive hunting, trapping and hunting, fishing and commercial fishing rights for some animal and aquatic species. There are no Cree traplines in the Project area.

The environmental and social impact assessment process provided for in the *James Bay and Northern Quebec Agreement* does not apply for the Project because it would be situated in a section of the Cree territory where the environmental and social protection regime set out in section 22 of the *James Bay and Northern Quebec Agreement* does not apply.

In the course of consultations conducted by the Agency, the Cree Nation Government stated that it does not anticipate that the Project would adversely affect their Agreement rights. The Agency offered to keep the Cree Nation Government informed at every stage of the Project's environmental assessment.

The Agency invited Lac Simon First Nation and Kitcisakik First Nation to participate in the environmental assessment because of the Project's location and the extent of potential negative effects on the exercise of potential ancestral rights. These two Algonquin First Nations claim to have rights on their claimed territory located within the study area and to use the lands and resources for traditional purposes. The Agency proposed a consultation plan to these First Nations that planned for consultation activities at different phases of the environmental assessment.

Through the Participant Funding Program, the Agency hopes to encourage the participation of Indigenous Peoples in the consultations regarding the environmental impact statement and the draft environmental assessment report. A total of $77,400 from the Participant Funding Program was allocated to Lac Simon First Nation and Kitcisakik First Nation.

These First Nations were invited to participate in the public comment periods for the Project description (October 21 to November 10, 2014), the draft environmental impact statement guidelines (December 5, 2014, to January 5, 2015) and the Proponent's environmental impact statement (September 10 to October 13, 2015). For each public comment period, the Agency sent correspondence to the Anishnabe Nation of Lac Simon Counsel and the Anicinapek Nation of Kitcisakik Counsel to inform them and posted the notice on the Canadian Environmental Assessment Registry as well as with the following local media: The Nation News, Le Citoyen de l'Harricana, Radio FM NRG 108.2 and on the Écho abitibien Internet site.

At every step of the environmental assessment, the Agency maintained contact with these First Nations through emails and teleconferences to discuss their concerns. During consultations on the environmental impact statement, the Agency received written submissions from the two Algonquin First Nations that were consulted. The First Nations expressed concern about the effects of the Project namely on the woodland caribou, air and water quality, and the contamination of country food. The Agency also organized a teleconference with the Lac Simon First Nation on August 16, 2017, to specifically discuss the significance of the woodland caribou in their current use of lands and resources for traditional purposes and one on November 29, 2017 with Lac Simon and Kitcisakik First Nations to discuss the caribou habitat offset plan proposed by the Proponent.

Details of the concerns raised and comments made are listed in chapters 6 and 7 under the relevant sections dealing with the anticipated effects on the environmental components. Appendix G presents the concerns raised by the Algonquin First Nations during the environmental assessment process, along with the Proponent's and the Agency's responses.

For the fourth consultation period, the Agency invited the First Nations to comment on the content, conclusions and recommendations in the draft environmental assessment report as well as on the potential conditions document formulated as part of the Project's environmental assessment, available on the Canadian Environmental Assessment Registry. The summary of comments received from First Nations is presented in Appendix J of this report.

4.1.2 *Indigenous consultation and engagement activities organized by the Proponent*

Since April 2014, the Proponent has organized meetings with representatives from the Lac Simon and Kitcisakik Algonquin First Nations to fully understand their use of the land and identify their concerns in order to take them into account in the Project design stage. Through these meetings, the Proponent also aimed to identify mitigation measures to minimize the Project's impacts on land users, maximize benefits for the First Nations affected by the Project and promote the dissemination of clear, easy-to-understand and transparent information.

For example, the Proponent held public information meetings Lac Simon and Kitcisakik First Nations on May 14 and October 28, 2015, respectively. The Proponent indicates that it was not able to directly meet with the members of the Lac Simon and Kitcisakik families that use the land in the Project area. However, it states that it obtained information on land use through the two First Nations' natural resource services.

4.2 Public Participation

4.2.1 *Public participation led by the Agency*

The Agency provided the public with opportunities to comment on the Project description, the guidelines, the proponent's environmental impact statement and the draft environmental assessment report and potential conditions.

The Agency supported public participation in the environmental assessment through its Participant Funding Program. In all, $21,174 was granted to three organizations—the Organisme de bassin versant Abitibi-Jamésie

(OBVAJ), the Société de l'eau souterraine de l'Abitibi-Témiscamingue (SESAT) and the Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)—to support their participation in the consultations on the environmental impact statement and the draft environmental assessment report.

To announce the comment periods and the Participant Funding Program, the Agency posted notices on the Canadian Environmental Assessment Registry Internet site as well as in various local newspapers and with local radio stations. Documents relevant to the consultations were posted on the Canadian Environmental Assessment Registry Internet site and made available in various public places.

The Agency held a first public comment period on the Project description from October 21 to November 10, 2014. The second public comment period on the draft guidelines took place from December 5, 2014, to January 5, 2015. During both of these consultation periods, the Agency did not receive any public comments.

The Agency held a third public comment period regarding the environmental impact statement from September 10 to October 13, 2015, to allow interested parties to comment on the Project's potential environmental effects and the mitigation measures proposed by the Proponent in its environmental impact statement. During this comment period, the Agency received memos from three environmental organizations—OBVAJ, SESAT and CREAT. They raised concerns mainly about species at risk and surface water and groundwater quality.

For the fourth public comment period, the Agency has invited the public to comment on the draft environmental assessment report and on the document of potential conditions. Comments received are summarized and presented in Appendix J on this report.

4.2.2 *Public participation activities organized by the Proponent*

Beginning in January 2014, the Proponent started a consultation process with key stakeholders in the region. The objective of these consultations was to identify the stakeholders' main concerns, identify the issues to be taken into consideration and elements which would help the Project better integrate into the target communities, and to gather information regarding how the stakeholders would like to be informed and consulted. Consultations were structured around discussion groups, thematic workshops, sectoral meetings and telephone interviews.

During the entire environmental assessment process, the Proponent maintained contact with the community by organizing open houses, establishing a monitoring committee, sending letters to residents living near the Project, creating newsletters and updating its Internet site (http://www.akasabaouest.com/resumeduprojet/Docs/Pages/default.aspx).

4.3 Participation of Federal and Other Experts

Federal departments provided expert advice, information and knowledge related to the Project according to their area of jurisdiction and in compliance with section 20 of the Act. Federal authorities who are members of the Federal Environmental Assessment Committee provided advice on the environmental effects of the Project during the review of the Proponent's environmental impact statement and in the preparation of this environmental assessment report. These authorities are Environment and Climate Change Canada, Fisheries and Oceans Canada, Natural Resources Canada and Health Canada.

Environment and Climate Change Canada has regulatory and legal responsibilities under the *Canadian Environmental Protection Act*, 1999, the *Migratory Birds Convention Act*, 1994, the *Species at Risk Act*, section 36 of the *Fisheries Act* and the *Metal Mining Effluent Regulations*. Environment and Climate Change Canada provided comments and information on migratory birds and their habitat, species at risk including the herd of Val-d'Or woodland caribou, water quality and management, air quality, greenhouse gases, accidents and malfunctions and mine site restoration.

Fisheries and Oceans Canada, which has regulatory and legal responsibilities under the *Fisheries Act*, provided comments and information on the potential adverse effects of the Project on fish and fish habitat.

Natural Resources Canada provided comments on hydrogeology.

Health Canada provided comments and information on the Project's potential adverse effects of changes to air and water quality, the sound environment and contamination of country food on the health of First Nations communities.

The Agency, with the support of Environment and Climate Change Canada, worked with experts from Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change and Quebec Ministry of Forests, Wildlife and Parks to address and analyze the Project's effects on the herd of Val-d'Or woodland caribou and ensure, as much as possible, a coordinated approach in the identification of mitigation and compensation measures.

5 Geographical Setting

5.1 Biophysical Environment

The Project area would be located in the natural province of the Abitibi lowlands[3], which is characterized by a relatively flat with small hills formed by rocky outcrops and interspersed with wetlands. The Project would be located in the geological Superior province, which extends throughout almost the entire territory of the Abitibi lowlands. The territory is crossed by the Cadillac fault, which measures around 320 kilometres and is very rich in gold deposits.

The Abitibi landscape includes numerous eskers and moraines consisting of elongated sand and coarse gravel deposits that, in some places, have been covered or partially covered by clay from the bottom of the preglacial Ojibway-Barlow Lake (Organisme de bassin versant Abitibi-Jamésie, 2014). The till and bedrock groundwater provide a sufficient supply of good quality and quantity of drinking water[4].

The southern part of the Abitibi lowlands has a cold continental climate that is characterized by a daily average temperature of -17.2 degrees Celsius in January and 17.2 degrees Celsius in July. Precipitations are limited, with a rain annual recorded average of 635 millimetres, and a snow annual recorded average of 300 centimetres. This climate is associated with a continuous boreal forest with relatively dense stands containing mainly boreal coniferous species and shade-intolerant deciduous trees.

The Project would be located in the southern portion of the boreal forest in the balsam fir white birch domain, an area dominated by conifers, mainly black spruce, jack pine and balsam fir. Deciduous trees, such as white birch and trembling aspens, grow on the hillsides and hilltops. Wetlands occupy 67% of the limited study area studied by the Proponent, namely 1,475 out of 2,203 hectares and90% of those wetlands consist of bogs and swamps. The largest and most common types of wetlands are ombrotrophic, shrubby and treed bogs, which cover over 1,040 hectares. Wetlands play a critical role in the diversification of habitats and contribute to the Abitibi region's ecological value.

The Project would be located in the vicinity of the divide between the southern drainage basins (St. Lawrence) and northern drainage basins (James Bay) (Organisme de bassin versant Abitibi-Jamésie, 2015). The limited study area is located entirely within the Sabourin River watershed area. The latter river flows into the Bourlamaque River, which flows north to Blouin Lake, on the northern edge of Val d'Or (Figure 9). All these watersheds flow into the Harricana River, which flows into James Bay. The three watercourses, numbered 2, 3 and 4, that border the Project site are small tributaries at the head of the Sabourin River watershed.

Bayeul Lake and Ben Lake are approximately two kilometres southeast of the Project site. These lakes are located in the Louvicourt River watershed, subwatershed of the Bell River, which flows into James Bay. The Sabourin esker could be channelled into Bayeul Lake. This esker is exposed in the southeastern part of the limited study area on a northeast/southwest axis (WSP, 2015a). The Sabourin esker is a source of drinking water for residents around Bayeul Lake (Figure 9).

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[3] Cadre écologique de référence du Québec (French only): http://www.mddelcc.gouv.qc.ca/biodiversite/cadre-ecologique/rapports/Provinces_Internet_16-12-2014.pdf

[4] According to the Organisme de bassin versant Abitibi-Jamésie (2014), the groundwater supplies drinking water for 73% of the population.

In the limited study area, an inventory was conducted in seven watercourses at the head of the Sabourin River watershed and the following fish species were identified: brook stickleback, lake chub, white sucker, trout-perch, sculpin, longnose dace and brook trout.

The limited study area is home to more than 11 species of amphibians and reptiles, more than 75 species of breeding birds, as well as around 20 terrestrial mammals, including moose, black bears, white-tailed deer and woodland caribou. There are also fur trapping game animals, including raccoons, beavers, American marten and weasels.

Several species that have been designated as threatened under the *Species at Risk Act* live on or are likely to frequent the territory, in particular the Canada warbler, common nighthawk, olive-sided flycatcher, short-eared owl, rusty blackbird, little brown myotis, northern myotis and woodland caribou.

In the Quebec Woodland Caribou Recovery Strategy 2013–2023 (Ministère du Développement durable de l'Environnement de la Faune et des Parcs, 2013), the woodland caribou herd of Val d'Or is considered an isolated population that is widely affected by the development of the territory and the use of resources of any kind. Val d'Or's woodland caribou population has decreased significantly in the last decades, from 70 individuals in 1974, to around 50 in the 1990s and to fewer than 20 since 2012. Although the number has seemed relatively stable since 2010, there have been too few calves to maintain or increase the population. Quebec's Woodland Caribou Recovery Strategy 2013–2023 indicates that the caribou's remaining habitats are sparse and fragmented (Ministère du Développement durable de l'Environnement de la Faune et des Parcs, 2013). To protect the herd, the Government of Quebec established the Réserve de biodiversité des Caribous-de-Val-d'Or in 2009; spanning 434 square kilometres. The reserve is less than 20 kilometres south of Val-d'Or and includes a protected calving site. The Val d'Or caribou frequent boggy areas with rocky outcrops where lichen grows. Female caribou give birth to their calves, in spring, in bogs or adjacent stands and remain there until snowfall. In 2012, Federal minister of the Environment published the Recovery Strategy for the woodland caribou (Rangifer tarandus caribou), boreal population, in Canada as per section 37 of *Species at Risk Act*. This local population is not self-sufficient and has only 35% of undisturbed habitat which is below the 65% treshold figured in the federal recovery strategy to enable a population to be self-sufficient.

5.2 Human Environment

The Project would be located in the Abitibi-Témiscamingue administrative region, more precisely in the Vallée-de-l'Or Regional County Municipality (MRC). The Project site would be located 15 kilometres to the east of Val d'Or, which, with its population of 32,000 in 2011, is the Regional County Municipality's main hub for public and private services and commercial activities. In the vicinity of the limited study area, there are four sectors with concentrations of permanent and seasonal residences: the Colombière, Bayeul Lake, Ben Lake and Sabourin Lake sectors (Figure 9).

Route 117, a provincial highway, runs east-west through the extended study area, then turns south in the eastern part. It is the only direct link between southern Quebec and the Abitibi-Témiscamingue region. Chemin du Lac-Sabourin runs north to south through the limited study area. It gives access to the Bayeul Lake, Ben Lake and Sabourin Lake sectors. The territory is also criss-crossed by many logging roads (currently used for other purposes) and industrial roads like the one between the Goldex plant and the Manitou site.

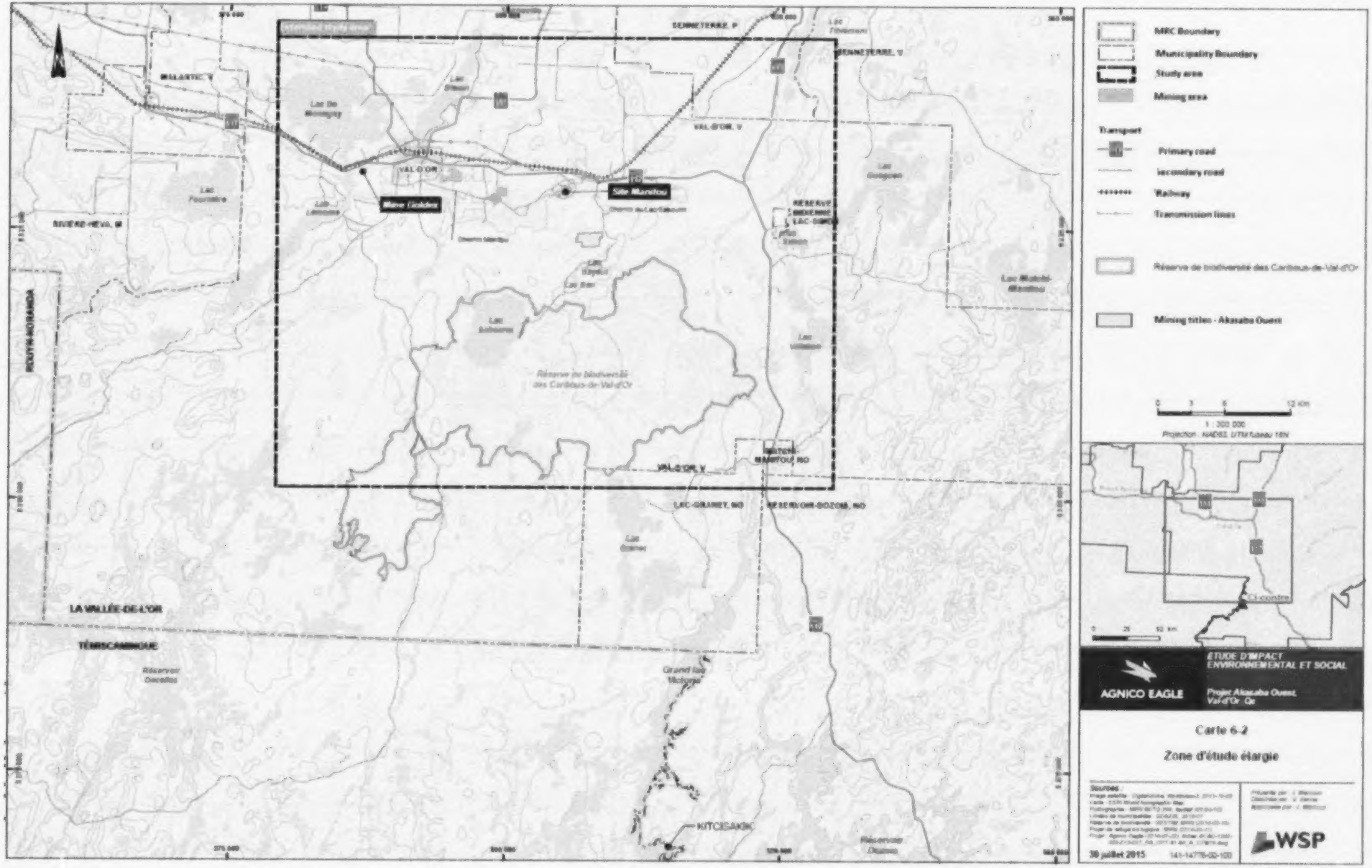
Logging, hunting and mining take place in the extended study area, and it is part of a forest management unit where six wood fibre companies operate and hold supply guarantees granted by the Quebec Department of Forests, Wildlife and Parks. The extended study area presents major mining constraints, due namely to urban perimeters, a groundwater catchment area and biological refuges.

The extended study area is popular with hunters and fishers and contains more than 200 temporary shelters. Fishing activities take place mainly at Sabourin Lake, which is famous for its walleye. The extended study area also crosses several trapping grounds, three of which are included in the limited study area.

Lac Simon First Nation is located on reserve lands 15 kilometres from the Project site, on the west shore of Lake Simon. Kitcisakik First Nation is located around 50 kilometres from the Project in the northern part of the La Vérendrye wildlife reserve. In 2017, their respective populations were 2,153 and 494. The southern part of the extended study area overlaps the Grand Lac Victoria Beaver Preserve, where First Nations hold exclusive trapping rights. The trapping grounds are reserved for the Lac Simon and Kitcisakik First Nations users.

The Project would located in the southern zone of the area covered by the *James Bay and Northern Quebec Agreement*, on category III lands–public Quebec lands designated for the Cree to have exclusive hunting, trapping, fishing and commercial fishing rights for some animal and aquatic species. There are no Cree trapping grounds in the Project area.

Figure 9 General Location of the Akasaba Project


MRC Boundary
Municipality Boundary
Study area
Mining area
Transport
Primary road
Secondary road
Railway
Transmission lines
Réserve de biodiversité des Caribous-de-Val-d'Or
Mining titles - Akasaba Ouest
0
3
6
12 km
1 : 300 000
Projection : NAD83, UTM fuseau 18N
Extended study area
SENNETERRE, P
SENNETERRE, V
MALARTIC, V
VAL-D'OR, V
VAL-D'OR
Mine Goldex
Site Manitou
RIVIÈRE-HÉVA, M
ROUYN-NORANDA
Réserve de biodiversité des Caribous-de-Val-d'Or
VAL-D'OR, V
LAC-GRANET, NO
RÉSERVOIR-DOZOIS, NO
LA VALLÉE-DE-L'OR
TÉMISCAMINGUE
KITCISAKIK
Ci-contre
0
25
50 km
ÉTUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
AGNICO EAGLE
Projet Akasaba Ouest, Val-d'Or, Qc
Carte 6-2
Zone d'étude élargie
Sources :
30 juillet 2015
141-14776-00-100
WSP

Source: WSP, 2016, Answers to the Agency's second request for information, page 121

6 Predicted Effects on Valued Components

6.1 Fish and Fish Habitat

Analysis of the effects on fish and fish habitat takes into consideration eggs, spawn, larvae, fish and all areas on which fish depend to carry out their life processes, including spawning grounds, and nursery, rearing and food supply areas, as defined in the *Fisheries Act*.

According to the Agency, a significant residual adverse effect is one that would result in the death of a fish population or the permanent alteration or destruction of fish habitat and that could not be mitigated by an offsetting plan under the *Fisheries Act*. The environmental effects rating criteria and the grid for determining the significance of the effects used by the Agency are shown in appendices C and D, respectively.

In the context of the Project has the potential to affect fish and fish habitat as a result of encroachment, alteration of water levels, and degradation of water quality through the release of contaminants. Project effects on fish and fish habitat could occur in watercourses 2, 3 and 4with in the watershed of the Sabourin River. This river empties into the Bourlamaque River, which flows northward and empties into Lake Blouin, on the northern outskirts of the city of Val d'Or (Figure 10).

In its analysis, the Agency concludes that the Project is not likely to cause significant adverse environmental effects on fish and fish habitat:

- Construction and operation of the mine complex would not entail any encroachment on fish habitat. No rerouting of watercourses or diversion of runoff to another watershed is required. The loss of part of the watershed area of the watercourse and the concomitant decrease in runoff inflows would not affect the quantity of habitat available (wetted perimeter). Pit dewatering would not cause any decrease in water levels in the bodies of water;
- It is very unlikely that an appreciable increase in the concentrations of suspended solids, metals, metalloids and other contaminants would occur to the point where they affect fish and fish habitat.

The following subsections describe the baseline of the environment, the key findings of the Proponent's analysis and provide the advice of expert departments as well as those of First Nations and the public on which the Agency based its conclusion regarding the significance of the Project's effects on fish and fish habitat.

6.1.1 *Baseline*

Surface waters

The river system in the limited study area drains into the Sabourin River, which has a watershed of some 17,000 hectares. The Sabourin River empties into the Bourlamaque River, which flows northward to Lakes Blouin and Malartic. The water ends up in the Harricana River, which eventually empties into James Bay (WSP, 2015a).

The closest lakes are Lakes Bayeul and Ben, located less than 5 kilometres from the mine site. These lakes are outside the limited study area and are not in the same watershed as the mine site. They are at a higher elevation, about 25 metres higher, than the mine site (WSP, 2015a). Lake Bayeul is fed by the Lake Sabourin esker (WSP, 2016a). This esker is exposed in the southeastern part of the limited study area along a northeast/southwest axis (WSP, 2015a).

The hydrographic system of the limited study area is consists primarily of small acidic streams draining a watershed dominated by bogs. The absence of relief explains the low flows and the dominance of channels (WSP, 2015a).

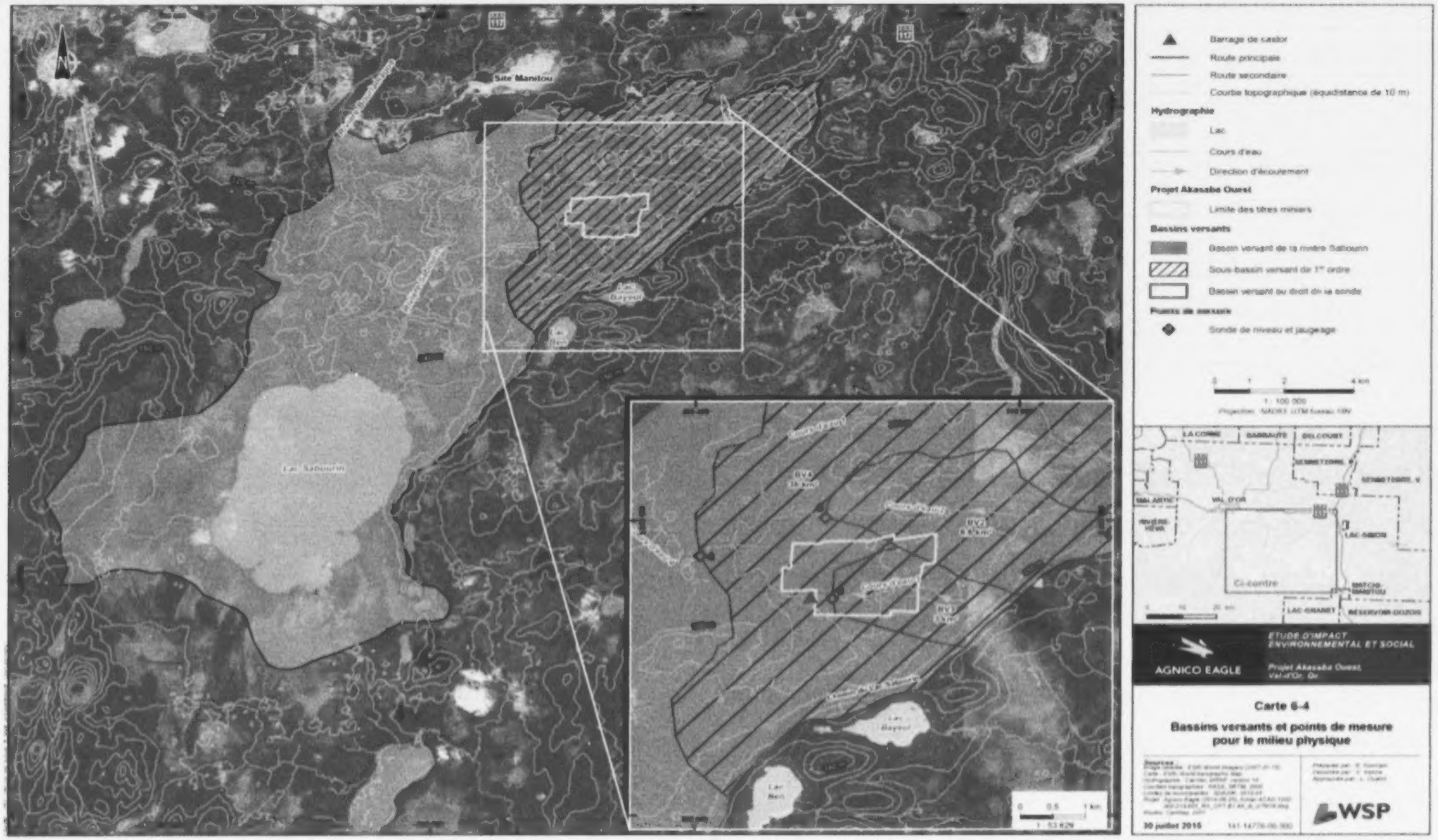
Three small watercourses at the head of the Sabourin watershed, watercourses 2, 3 and 4, are located near the mine site (Figure 10):

- Watercourse 2 lies north of the Project, about 1 kilometre away. The Project may encroach on part of its drainage basin;
- Watercourse 3 runs south of the planned mining infrastructure, about 200 metres distant. Watercourse 3 would receive the mining effluent. Four beaver dams impede the free passage of fish;
- Watercourse 4, a little over 1.5 kilometres west of the mine site, receives inflows from watercourses 2 and 3.

Water quality

The Proponent carried out a physical and chemical characterization of the surface water in watercourses 2, 3 and 4 over a six-month period, from May to October 2016 (WSP, 2017). The water in these streams is acidic, with a pH varying between 4.77 and 5.55. This acidity is due to the many peat bogs that the water flows through. The results show exceedances of the water quality criteria for consumption and for the protection of aquatic life (chronic or acute) established by the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change and by the Canadian Council of Ministers of the Environment in the three watercourses. This was the case for concentrations of certain metals such as aluminum, iron and lead, where the water quality criteria were exceeded at least once at all sampling stations during the six months. Exceedances of the water quality criteria of the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change and the Canadian Council of Ministers of the Environment are seen chiefly in the summer for arsenic, beryllium, cadmium, copper, manganese, mercury and zinc. The water quality criteria for total phosphorus established by the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change and the Canadian Council of Ministers of the Environment were exceeded several times.

Figure 10 Watershed and water courses in the local study area


Site Manitou
Lac Sabourin
Lac Bayeul
Lac Ben
Barrage de castor
Route principale
Route secondaire
Courbe topographique (équidistance de 10 m)
Hydrographie
Lac
Cours d'eau
Direction d'écoulement
Projet Akasaba Ouest
Limite des titres miniers
Bassins versants
Bassin versant de la rivière Sabourin
Sous-bassin versant de 1er ordre
Bassin versant au droit de la sonde
Points de mesure
Sonde de niveau et jaugeage
0 1 2 4 km
1 : 100 000
LA CORNE
BARRAUTE
BELCOURT
VAL-D'OR
Ci-contre
LAC-GRANET
RÉSERVOIR-DOZOIS
AGNICO EAGLE
ÉTUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
Projet Akasaba Ouest, Val-d'Or, Qc
Carte 6-4
Bassins versants et points de mesure pour le milieu physique
Sources
30 juillet 2015
WSP

Legend: Beaver dam; Primary road; Secondary road; Topographic line (10 m equidistance); Hydrography; Lake; Water course; Flow direction; Akasaba West Project; Mining title boundaries; Watersheds; Sabourin river watershed; First order subwatershed; Watershed that feeds la sonde river; Level and gauge sensor (WSP, 2015a)

Sediment quality

The beds of the watercourses consist of fine materials, in order of importance silt, sand and clay. With regard to sediment quality, most of the concentrations of metals, metalloids, trace elements and heavy elements were close to or below the limits of detection used (WSP, 2015a). However, the arsenic concentrations in 19 of the 20 samples taken exceeded at least one of the criteria set by the Canadian Council of Ministers of the Environment or the criteria for the Assessment of Sediment Quality in Quebec (Environment and Climate Change Canada and the Quebec Department of Sustainable Development, Environment and Parks 2007). Moreover, in 10 out of the 20 samples taken, the chromium concentrations were found to exceed the rare effect level established by the criteria for the Assessment of Sediment Quality in Quebec. According to the Proponent, this exceedance is attributable to a high background level.

Fish population

During the inventory work carried out in 2014 and 2016, the Proponent found the following species of fish in the limited study area: brook stickleback, lake chub, white sucker, trout-perch, sculpin, longnose dace and brook trout. The Proponent's inventories demonstrated the presence of fish in watercourses 2, 3 and 4. Lake chub was the most abundant chiefly in watercourse 4. Brook trout are found in watercourses 2 and 3. Watercourses 2, 3 and 4 are acidic, since they drain a watershed dominated by peat bogs. In the Proponent's view these watercourses do not constitute quality habitat for maintaining fish populations (WSP 2015).

Groundwater

The mine site is characterized by four hydrostratigraphic units composed of bedrock overlain by glacial till, then glaciolacustrine sediments and lastly organic matter. The limited study area is located at the intersection of two distinct geological regions which are separated by a system of faults (WSP, 2015a). In general, groundwater flow follows the surface topography and runs westward. According to the Proponent, the faults have no effect on groundwater flow since they are 2.6 billion years old and inactive (WSP, 2016a).

A thick layer of impermeable silt underlying the watercourses and wetlands limits exchanges between the watercourses and the aquifer. The portion of groundwater that flows into watercourses 2 and 3 is small, with inflow rates of 0.0085 litres per second in watercourse 2 and 0.79 litres per second in watercourse 3 (WSP, 2016a).

Unlike the surface waters, which are acidic, in general the groundwater samples were found to have a high calcium carbonate content and an alkaline pH. At the mine site, the groundwater showed some exceedances of the seepage drinking water quality criteria established by the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change for arsenic, copper, iron, manganese, mercury, lead and sulphides (Richelieu Hydrogéologie, 2015).

6.1.2 *Proponent's assessment of environmental effects*

Anticipated effects

According to the Proponent, the potential effect of the Project on fish and fish habitat is linked to loss of habitat due to encroachment, reduction in the quantity of water and disturbance of habitat through degradation of water quality in watercourses 2, 3 and 4. The Proponent proposed several mitigation measures to protect fish and fish habitat. They are presented in Appendix H. The Proponent considered that the significance of the effect on fish and fish habitat would be minor. The magnitude of the effect would be low, given the low diversity of fish species and the poor quality of the habitats affected by the Project. The extent of the effect would be at the Project site, since it would be limited to areas where construction work is done and a short stretch of river downstream from the point of effluent discharge. The duration of the effect would be medium, since it would be limited by the mine's life span. The Proponent based these conclusions with the following arguments:

Loss of habitat through encroachment and reduction in the quality of water

Construction of the mine complex would result in no encroachment on fish habitat. The Project requires no stream rerouting or diversion of runoff to another watershed.

In the construction phase, the Proponent would install a culvert on watercourse 3; this is needed for construction of the access road that would link the mine site to the Eacom road. Where the road crosses the watercourse, the latter is 4.5 metres wide and 0.8 metre deep. No spawning grounds have been identified at this spot (WSP2017).

In the operation phase, watercourse 2 may experience a decrease of about 2% in inflows of runoff, which is not significant, while watercourse 3 would experience a decrease of 15% over a stretch of some 1.94 kilometres, upstream from the mining effluent. The U-shaped profile of the watercourse means that the reduction would have little effect on the quantity of fish habitat.

In the operation phase, the Project may have effects on the quantity of surface water available because of water table drawdown during pit dewatering and the pumping of three peripheral wells. The Proponent demonstrated that the zone of influence of water table drawdown may vary between 600 and 1,050 metres measured from the centre of the pit (Richelieu Hydrogéologie, 2015). However, the thick layer of impermeable silt on which the stream beds rest limits the movement of surface water toward the aquifer. The simulation carried out by the Proponent shows that the proportion of groundwater that flows into the watercourses is low relative to surface drainage flows into those streams (WSP, 2016a). The simulation applied to wetlands shows a transfer of surface water to the aquifer of about 450 m3 per day. The wetlands that are already saturated would remain so because the expected inflows of groundwater are much less than their supply of surface water (WSP, 2016a). The uncertainty analysis conducted by the Proponent shows that within the extremes of hydraulic conductivity and recharge, results differ very little, but no extreme scenario of water table drawdown is expected. The Proponent predicted no effect from water table drawdown on the quantity of water available in fish habitats in watercourses 2, 3 and 4. The Proponent also indicated that water table drawdown is unlikely to extend as far as Lake Bayeul or the Lake Sabourin esker, which feeds Lake Bayeul (WSP, 2016a).

Proposed monitoring

In order to reassure the public regarding the results of its simulations, the Proponent undertook to install three piezometers across the wetlands to monitor the effect of water table drawdown on them during the life span of the pit (WSP, 2016a). The Proponent also added observation wells between the planned pit and Lake Bayeul to measure water table drawdown in that direction (WSP, 2016b).

Disturbance of fish and fish habitat through degradation of water quality

Inputs of suspended solids

Given their close proximity, watercourses 2 and 3 are likely to receive inputs of suspended solids during the construction, operation and closure phases of the mine site.

During the construction phase, installation of a culvert on watercourse 3 and mine site preparation activities (clearing of vegetation, topsoil removal, excavation of water collection ditches, etc.) may promote the transport of suspended solids during heavy rainfall events.

During the operation and closure phases, inputs of suspended solids may be caused by surface runoff from rainfall and snowmelt on active and non-stabilized site surfaces at the mine site and by exfiltration of water from ore stockpile areas and waste rock and overburden piles.

In order to limit inputs of suspended solids to fish habitat, the Proponent proposed to implement a water management plan including the following measures:

- maintain a 15-metre band of vegetation along watercourses;
- use effective means to prevent sediments from entering aquatic environments and causing increased turbidity beyond the immediate work area;
- promptly upon starting construction, lay out a water collection pond and direct all site runoff to it;
- promptly stabilize the slopes of waste rock and overburden piles facing watercourses 2 and 3 to reduce risks of erosion;
- channel all mine site water (waste rock, overburden, ore piles) to the collection pond for treatment before it passes through the polishing pond and is discharged into watercourse 3;
- restore waste rock piles by reducing slopes and revegetating them so as to limit erosion.

Inputs of metals, metalloids and organic contaminants from surface water

As the ore would be processed at the Goldex plant, there would be no process water, therefore no cyanide, at the Project site. For this reason, mine water would comprise solely site drainage water and water pumped from the pit and from the peripheral wells to keep it dry.

To assess the metal and metalloid content of the mine water, the Proponent carried out kinetic and static tests on the waste rock and the ore. The results showed that in the short term, while the mine is in operation, there would be no acid drainage or metal leaching. During the operation phase, the composition of mine site drainage water would not be influenced by its passage over soils or by runoff and exfiltration flows from ore, waste rock or overburden stockpiles.

During the operation phase, the composition of mine water would be influenced by the properties of the groundwater, rainwater runoff from the slopes of the pit and dissolution of ammonium nitrate-based explosives. Use of explosives in the pit may lead to the presence of nitrogen compounds in the water.

After the mine closes, with the cessation of pumping, groundwater and surface drainage would gradually flood the pit. The Proponent expected the pit to fill in 16 years. According to the Proponent's modelling, the water would be of equivalent quality to the groundwater. All parameters modelled would meet surface water quality criteria except for arsenic, mercury and phosphorus. These elements are naturally present in high concentrations. After the pit fills up, the levels of copper, antimony and phosphorus may increase, though never exceeding the water quality criteria of the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change.

Static and kinetic test results showed that acidification of potentially acid generating waste rock may begin 12 years after the waste rock piles are created, that is, long after the site operation and closure phases. This acidification process is triggered when water and oxygen come in contact with sulphide minerals. This acidification may also lead to leaching of metals. Without protective measures, the potentially acid generating waste rock pile[5] may result in acid mine drainage in watercourses 2 and 3 and ultimately in the Sabourin River watershed.

The Proponent proposed several measures for limiting inputs of contaminants from surface water:

- capturing and directing all runoff and mine water flows on the site into a collection pond where they would be treated using mobile treatment equipment before release into watercourse 3;
- using emulsion explosives for blasting. Emulsion helps to limit the production of ammonia and the dissolution of nitrates. The Proponent has planned measures for recovering and containing residues from explosives in order to limit dispersal of deleterious contaminants. In addition, pit water likely to contain contaminants from the use of explosives would be channeled to the collection pond for treatment;
- restoring the potentially acid-generating waste rock pile so as to avoid any long-term acidification of the environment. The planned oxidation control method involves overlaying the waste rock stockpile with a multilayer, low-permeability covering as a barrier to water and oxygen. The barrier would be laid at the end of mining operations, long before the 12-year time frame calculated for acidification of the most reactive rock.

According to the Proponent, it is highly unlikely that an appreciable increase in metal concentrations would occur in watercourse 3 to the point where fish and fish habitat would be affected.

Proposed monitoring

The Proponent planned to carry out monitoring of the quality of final effluent and water in the exposed area of watercourse 3 in order to measure contaminant levels. This will make it possible to adjust the treatment system as necessary to ensure the effluent meets the discharge requirements of the *Metal Mining Effluent Regulations* and the requirements of Directive 019 which include effluent discharge objectives. The Proponent would implement an environmental effects monitoring program under the *Metal Mining Effluent Regulations*. This entails the drafting of a study plan and sampling and analysis of effluent and surface water quality, sentinel fish populations and of benthic invertebrate communities and sediments in areas exposed to mining effluents as well as in a reference area. The Proponent would conduct toxicity testing of the effluent. In the event of exceedances of surface water quality criteria or effects on fish, corrective action would be taken to preserve the integrity of the aquatic ecosystem.

In addition, the Proponent's monitoring of mining effluent quality would include tracking the concentrations of various nitrogenous substances that could compromise the life of aquatic organisms. In the event that exceedances of standards are observed, changes would be made to the water treatment system to ensure compliance with the criteria for the protection of aquatic life.

After closure, when the water level reaches a height close to the overflow point, the Proponent would carry out water quality monitoring in the pit. The quality of the water would be analyzed and, if necessary, the water would be treated to ensure that it meets the criteria for the protection of aquatic life prior to release to the environment.

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[5] The Proponent estimated that half of the waste rock excavated from the pit has acid generating potential.

Inputs of metals, metalloids and organic contaminants from groundwater
Groundwater contaminated by Project activities could migrate through the most permeable units toward surface waters downstream from the mine site.

On the Project site, the aquifer is protected by a layer of clayey silt which limits exchanges between the groundwater and surface waters. During the operation phase, there is little risk of percolation of acid leacheate into groundwater from the waste rock and ore stockpiles. Furthermore, based on the results of kinetic and static tests, the Proponent determined that the ore and the potentially acid-generating waste rock would not generate acid mine drainage during the period of operation of the mine. Lastly, any groundwater that becomes contaminated through mine site activities would be quickly channelled to the pit through pumping.

During the closure phase, if contaminants associated with mining activities are present in the groundwater, they could migrate through the most permeable units toward surface waters. Modelling showed, however, that the likelihood of contamination of groundwater is low. In fact, once the pit has been filled, groundwater flows would go toward watercourses 2 and 3 and toward the pit. In addition, restoration of the potentially acid-generating waste rock pile would be designed to avoid long-term acidification of the environment and would therefore help prevent acid mine drainage and, consequently, eliminate the risk of migration of this drainage to the groundwater table.

Proposed monitoring
The Proponent planned to use about 10 observation wells for the post-restoration monitoring/follow-up of groundwater. These wells would be located so as to cover the entire area around activities and uses that are dependent on groundwater quality.

6.1.3 *Views expressed*

Federal authorities

Loss of habitat through encroachment and reduction in the quantity of water
Fisheries and Oceans Canada considered that the environmental effects of the Project on fish and fish habitat were identified adequately by the Proponent. Based on Fisheries and Oceans Canada's estimates, the Project would result in the loss of 17% of the watershed area of watercourse 3, which would lead to a decrease in runoff flows to this watercourse (DFO 2015). According to Fisheries and Oceans Canada, the many beaver ponds in the area would help maintain the wetted area of the watercourse in spite of a potential decrease in surface water inflows.

In addition, considering the presence of brook trout in watercourse 3 where the Proponent planned to construct crossing structures (culverts) to connect with the Eacom road, Fisheries and Oceans Canada (2016) recommended that the Proponent take into consideration certain mitigation measures (set out in the Agency's analysis and conclusions in the following section).

Fisheries and Oceans Canada considered that the Project is not likely to cause serious harm to fish and fish habitat[6] and, consequently, no authorization is required under paragraph 35(2)(b) of the *Fisheries Act*.

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[6] Pursuant to the *Fisheries Act*, serious harm to fish is defined as the death of fish, or any permanent alteration to, or destruction of, fish habitat

Natural Resources Canada was satisfied with the hydrogeological description of the environment provided by the Proponent. According to Natural Resources Canada, the justification based on the hydraulic inactivity of the faults owing to their crystallization is entirely plausible. The uncertainty analysis that the Proponent conducted to ensure that the hydrogeological modelling accurately predicted the drawdown and drainage effects of the mine on groundwater and surface waters was satisfactory. Lastly, Natural Resources Canada was satisfied with the Proponent's modelling related to hydraulic exchanges between groundwater and surface waters.

Disturbance of fish and fish habitat through degradation of water quality

Environment and Climate Change Canada was satisfied with the information the Proponent provided to establish the baseline conditions of the quality of surface water, sediments and groundwater in the study area. The geochemical characterization study was acceptable on the whole, but some concern remained with respect to the representativeness of the samples tested and their number. Environment and Climate Change Canada was of the view that the Proponent would need to continue the characterization of mined materials and conduct geochemical testing on a greater scale in the field (in drums, for example) during the operation phase in order to confirm, in particular, the results obtained, or as appropriate, to implement suitable management measures.

Environment and Climate Change Canada examined the Proponent's water management plan and was generally satisfied with the measures proposed for the construction period. Environment and Climate Change Canada pointed out that the water that would flow from the work area to the natural environment could be considered mining effluent within the meaning of the *Metal Mining Effluent Regulations*, if the total amount of water discharged to the receiving environment exceeds 50 m3/day and if the discharge results in the deposit of a deleterious substance in waters frequented by fish. The Proponent would need to comply with the requirements of the regulations with respect to control, location and identification.

Environment and Climate Change Canada was generally satisfied with the measures proposed in the water management plan for the operation phase. The Department considered that uncertainties remain with regard to the efficiency of the mobile water treatment equipment; however, monitoring of mine effluent quality would enable the Proponent to ensure compliance with standards and take any necessary corrective action. Environment and Climate Change Canada was concerned about the channeling of groundwater from the peripheral interception wells to the polishing pond. The results of the hydrogeological study showed that the groundwater contains arsenic, mercury and sulphides. This water may need additional treatment at the outlet of the polishing pond. Therefore, Environment and Climate Change Canada recommended that the Proponent provides for treatment in the event that this water does not meet the requirements of the *Metal Mining Effluent Regulations*. Environment and Climate Change Canada was of the view that preventive measures should be implemented to reduce the levels of nitrogen compounds (linked to the use of explosives) that could be present in the mine water. Treatment of the mine effluent would need to be adjusted as a function of the presence of these compounds. Environment and Climate Change Canada indicated that runoff from the section of the access road that is located within the site was considered mine water and was subject to the requirements of the *Metal Mining Effluent Regulations*. The other part of this section of road (between the mine site boundary and the EACOM road) is subject to the General Prohibitions of the *Fisheries Act*. It is important that the Proponent take this difference into account in runoff management.

Environment and Climate Change Canada was concerned about water management during the closure and post-restoration period. The details related to this management would be set forth in the final closure plan for the mine site. Environment and Climate Change Canada recommended that a copy of the final restoration plan be forwarded to the federal authorities as soon as it becomes available, to enable them to analyze it and make recommendations.

Environment and Climate Change Canada was of the view that monitoring of the integrity and effectiveness of the covering on the potentially acid-generating waste rock pile and monitoring of the groundwater should last the same amount of time. These monitoring periods would need to be detailed in the final closure plan for the mine site.

Environment and Climate Change Canada had some reservations about the Proponent's intent to deposit the sludge from the water collection pond in the pit. This sludge can have an effect on the quality of the final effluent in the flooded pit. Consequently, Environment and Climate Change Canada recommended that the chemical composition and stability of the treatment sludge be checked during operations and that the sludge management plan be adjusted according to the results. With regard to the final effluent in the pit, based on the simulation study, the Proponent did not foresee any problems in terms of meeting the discharge standards. However, Environment and Climate Change Canada was of the view that these predictions should be confirmed through a monitoring program and that the Proponent would need to be prepared to deploy a wastewater treatment unit, if necessary.

First Nations

The Conseil des Anicinapek de Kitcisakik (2015) noted that the Proponent has not conducted an inventory of the fish species in watercourses 5, 6 and 8, which the ore transport road is expected to cross. Surveys conducted by the Proponent in May 2016 confirmed the absence of fish in these watercourses. Furthermore, the Proponent confirmed that alignment variant 1 (6.7 kilometres transport road) has been rejected because the EACOM road option has been selected, which means that culverts would no longer be built on watercourses 5, 6 and 8.

The Lac Simon and Kitcisakik Algonquin First Nations (2015), which are concerned about water quality during the operation phase and after mine closure, asked the Proponent for additional details on the duration of effluent monitoring. They also asked about the existence of an acid generation verification plan during operations and the proposed measures in the event that acid mine drainage is detected.

The Proponent will carry out water quality monitoring in accordance with the frequency and duration set out in the *Metal Mining Effluent Regulations* and in Quebec Directive 019 on the mining industry and will take corrective action as needed. Monitoring of water quality from the standpoint of treatment and discharge to the environment is an effective way to detect acid mine drainage and metal leaching after the operation phase. With regard to the closure and post-closure period, the Agency has provided for monitoring and would require that the Proponent implement corrective measures to prevent acid mine drainage (see section below).

Public

The Société de l'eau souterraine Abitibi-Témiscamingue (2015) and the Organisme du bassin versant Abitibi Jamésie (2015) were concerned about the potential effects of water table drawdown on the esker at Lake Sabourin and on those at Lakes Ben and Bayeul. According to the Organisme du bassin versant Abitibi Jamésie (2015), groundwater pumping from the Lake Sabourin esker could have an irreversible effect on the recharge of Lakes Ben and Bayeul. The Société de l'eau souterraine Abitibi-Témiscamingue recommended that the Proponent minimize forest clearing around the Lake Sabourin esker adjacent to the mine site in order to minimize mine water flows during operations. The Organisme du bassin versant Abitibi Jamésie recommended that the stakeholders reflect on the measures that should be put in place in the event that the water level in the lakes is affected by mine operations.

According to the Proponent, the Lake Sabourin esker which cuts across the study area would not be affected by the Project because it is located a considerable distance from and at a higher elevation than the mine. Therefore, the Proponent proposed to add a piezometer even farther away from the Project in order to monitor changes in drawdown toward Lake Bayeul, which is closer to the pit than Lake Ben.

The Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT) was concerned about the effect of the discharge of effluents to watercourse 3 and considers that it is important to control the discharge flow rate to avoid causing overly large peaks and changing the role played this tributary in the hydrodynamics of the Sabourin River. The CREAT recommended that monitoring be carried out on the Sabourin River and fish habitats to determine whether the discharges to this tributary affect the Sabourin River ecosystem.

The Agency confirms that the Proponent would be required to conduct biological monitoring, in particular in watercourse 3 or any other watercourse identified by the competent authorities, as required by the Environmental effects monitoring program under the *Metal Mining Effluent Regulations*.

6.1.4 Agency analysis and conclusion

Analysis of the effects

The Agency considers that the residual adverse effects on fish and fish habitat are not significant. The magnitude of the effect is deemed limited, since the Project would have an effect on habitat that does not limit or reduce the capacity of fish to use these habitats (no loss of habitat and low inputs of contaminants). The extent of the effect would be localized, because it would be limited to watercourse 3. The duration of the effect would be long since the low inputs of contaminants to the habitat would occur during all Project phases and after the pit is flooded, over several seasons in the life cycle of fish. The effect would be partially reversible since even if the discharged water would comply with the *Metal Mining Effluent Regulations*, the trace of the contaminants it contains could be persistent.

Loss of habitat through encroachment and reduction in the quantity of water

The Agency considers the advice provided by Fisheries and Oceans Canada to conclude that the Project is not likely to cause serious harm to fish and fish habitat provided that the Proponent complies with the Guidelines for Watercourse Crossings in Quebec (Fisheries and Oceans Canada, 2016). The Agency, with the support of Natural Resources Canada, considers that pit dewatering would not lead to a reduction in water quantity in watercourses 2 and 3 or in Lakes Bayeul and Ben.

Disturbance of habitat through degradation of water quality

The Agency considers the views of Environment and Climate Change Canada in concluding that contamination of the water by suspended solids, metals and acid mine drainage is not significant:

- All the mine water, including pit dewatering water which encompasses the water from the three peripheral wells, would be collected and treated as appropriate before being discharged into watercourse 3;
- Kinetic tests show that waste rock and ore do not pose a risk of leaching or of generating acid mine drainage during the operation phase;

- Following closure, the risks of acid mine drainage would be controlled through restoration based on placing a multilayer covering on the potentially acid-generating waste rock pile. The final effluent from the dewatered pit would be treated as necessary before it is discharged to watercourse 3.

Key mitigation measures to avoid significant effects

The Agency identifies the main mitigation measures required to ensure that there would be no significant environmental effects on fish and fish habitat. The Agency takes into consideration the mitigation measures proposed by the Proponent, input from federal authorities, as well as comments received from First Nations and the general public. The mitigation measures are as follows:

- Follow the current version of the Guidelines for Watercourse Crossings in Quebec (Fisheries and Oceans, 2016) during the planning and installation of culverts in order to maintain free passage of fish at the watercourse 3 crossing;
- Carry out culvert installation and any related work in fish habitat between May 15 and September 30, that is, outside the sensitive period for brook trout;
- Comply with measures designed to avoid serious harm to fish and fish habitat including those of species at risk. The proponent would need to avoid fording of watercourses by machinery. In the event that fording is justified, machinery crossing (fording) a stream or watercourse should be limited to a single one-way trip per day;
- Restore the beds and banks of aquatic environments affected by the work and by machinery to their original condition following dismantling of structures, on all the disturbed areas;
- Limit the riprapping of banks to the height of the ordinary high water mark, and revegetate the bank from the limit of the riprapping using recognized bioengineering techniques employing overhanging shrub and herb layers. Replanting would be done as soon as possible after grading work is complete, with preference given to indigenous species;
- Implement effective measures to limit inputs of sediment from the worksite to the aquatic environment during the construction phase (e.g. sediment barrier, berms, sediment trap, sedimentation pond, temporary bank stabilization, diversion of waters to vegetated areas, maintenance of a 15-m buffer of undisturbed vegetation along watercourses). These measures would be maintained and throughout the construction phase and during temporary closure of the worksite;
- No debris may be deposited in the aquatic environment, and any debris that accidentally enters the water would be removed as quickly as possible;
- Implement measures to control erosion, particularly with respect to storage areas for waste rock, overburden and ore, at the water management site, along the access road and in watercourse 3 (site of the culvert and of mine effluent discharge) during all Project phases in order to prevent the deposit of deleterious substances in waters frequented by fish. These measures include quickly stabilizing the slopes of the waste rock stockpiles;
- Collect runoff from the entire mine site, including the waste rock piles, the overburden pile, the ore pile or any other mining infrastructure as well as the dewatering water in a collection pond;
- Install a mobile water treatment unit at the outlet from the water collection pond and the polishing pond to extract, as needed, suspended solids, metals and other chemical contaminants prior to release to the environment. The water that is discharged to the environment would meet the requirements of the *Metal Mining Effluent Regulations* or subsection 36(3) of the *Fisheries Act*;

- Use emulsion explosives with limited dissolving capacity to minimize the amount of nitrates and ammonia that dissolves in mine water;
- Develop and implement a plan for managing and handling explosives that includes measures for preventing contamination of the receiving environment by ammonia and nitrates present in the ore piles and waste rock piles. The plan should include staff training and awareness, spill management, and a water quality monitoring program;
- Conduct geochemical testing on a larger scale in the field (in drums, for example) throughout the period of mine operation, in order to adjust management of materials according to the results obtained.
- Prevent the release of acid rock drainage in fish habitat, for example by installing a low-permeability multilayer covering on the potentially acid-generating waste rock pile after extraction activities in the pit end. Potentially acid-generating waste rock piles would be created in a way that limits the development of convection cells by controlling vertical grain-size segregation during discharge using a bulldozer.
- Submit a final restoration plan to the federal authorities for analysis and recommendations as soon as it is available. It should include a detailed plan and description of the fate of the water collection pond and the polishing pond along with details of the channeling of waters in the collection pond once breaching occurs;
- Install a sump in the garage floor and an oil-water separator on the outlet pipe. Cleaning water would be directed into a septic tank, which would be emptied periodically, and the oil-water separator would be emptied when necessary;
- Inspect the machinery before first use and regularly when needed afterwards to ensure it is in good working order.
- Maintain petroleum product and hazardous materials spill kits on the site at all times. Employees would receive adequate training in the use of such kits and in spill response;
- Develop and implement a monitoring program to ensure that all the mitigation measures are implemented in a timely and appropriate manner by employees and contractors.

Need for and requirements of follow-up

In order to verify the predictions of effects on fish and fish habitat as well as the effectiveness of the proposed mitigation measures, the Proponent would, in consultation with federal authorities and the Lac Simon and Kitcisakik Algonquin First Nations, implement a monitoring program for fish and fish habitat:

- Monitoring of effluent quality and adjustment of the water treatment system as necessary to ensure it meets the discharge standards of the *Metal Mining Effluent Regulations*. This follow-up would include metals as well as the concentrations of nitrogen compounds associated with the use of explosives which could compromise the life of aquatic organisms;
- Biological monitoring, notably in watercourse 3 or any other watercourse identified by the competent authorities, as required by the Environmental effects monitoring program under the *Metal Mining Effluent Regulations;*
- Monitoring of the quality of the final effluent from the flooded pit to ensure treatment of the water as necessary in order to meet the discharge standards of the *Metal Mining Effluent Regulations*;

- Monitoring of the integrity and effectiveness of the covering on the potentially acid-generating waste rock pile;
- Groundwater quality monitoring throughout all phases of the Project and during monitoring of the integrity and effectiveness of the covering on the potentially acid-generating waste rock pile.

6.2 Migratory Birds

The analysis of the effects on migratory birds covers the birds, their eggs and nests, as defined in the *Migratory Birds Convention Act*, 1994. Migratory birds include landbirds, [7] shorebirds, aquatic birds and waterfowl listed under the Convention (Schedule to the *Migratory Birds Convention Act*, 1994). Some of these species are listed in Schedule 1 of the *Species at Risk Act*. The analysis also covers birds which are non-migratory, but which are protected under the *Species at Risk Act*. This is the case in particular of the Rusty Blackbird and the Short-eared Owl.

According to the Agency, significant residual adverse effects derive from loss and deterioration of habitat, incidental take [8] or any nuisance likely to result in a decline of a bird population or to hinder the recovery of one or more species at risk subject to a recovery strategy within the meaning of the *Species at Risk Act*. The criteria for evaluating environmental effects and the significant effects determination matrix used by the Agency are shown in Appendix C and D respectively.

With regard to the Project, the effects would be limited to some 93 hectares of habitat frequented by landbirds at the site. The presence of two species at risk has been confirmed by the Proponent's inventories: the Common Nighthawk and the Olive-sided Flycatcher. The Canada Warbler, the Rusty Blackbird and the Short-eared Owl were not recorded at the Project site or in the study area, but the mine site has habitat conducive to their nesting.

In accordance with its analysis, the Agency concludes that the Project is unlikely to cause significant adverse environmental effects on migratory birds and bird birds at risk:

- Permanent loss of bird habitat would be limited to 40 hectares, but this could be offset by the creation of wetlands and forest habitat (compensation plan for Woodland Caribou, see section 6.4). This loss would not result in a decline in bird populations and would not hinder the recovery of populations of species at risk;
- the Project is unlikely to cause mortality among migratory birds and species at risk (incidental take), and disturbance would be limited to the Project site.

The following sub-sections describe the key findings of the Proponent's analysis, including a description of the baseline conditions of the limited study area and assessment of the effects. They describe terrestrial and wetland environments likely to be used by migratory birds and birds at risk. They detail the advice of expert authorities, Indigenous people and the public on which the Agency relies to determine the significance of Project effects on migratory birds and birds at risk.

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[7] "Landbird" refers to species whose life cycle is land-based and who occupy many habitats, ranging from forest interiors and edges, regenerating areas, open and urban environments, cliffs, emergent wetland vegetation, and manmade structures. This includes chiefly passerines, woodpeckers, raptors and owls, gallinaceans, doves, cuckoos, nightjars, swifts, hummingbirds and kingfishers (Environment and Climate Change Canada. 2008).

[8] "Incidental take" designates the fact of injuring, killing or disturbing migratory birds or inadvertently destroying or disturbing their nest or eggs. In addition to harming the birds, incidental take can have long-term consequences for migratory bird populations in Canada, particularly through the cumulative effect of numerous different incidents (https://www.canada.ca/fr/environnement-changement-climatique/services/prevention-effets-nefastes-oiseaux-migrateurs/apercu.html)

6.2.1 Baseline Conditions

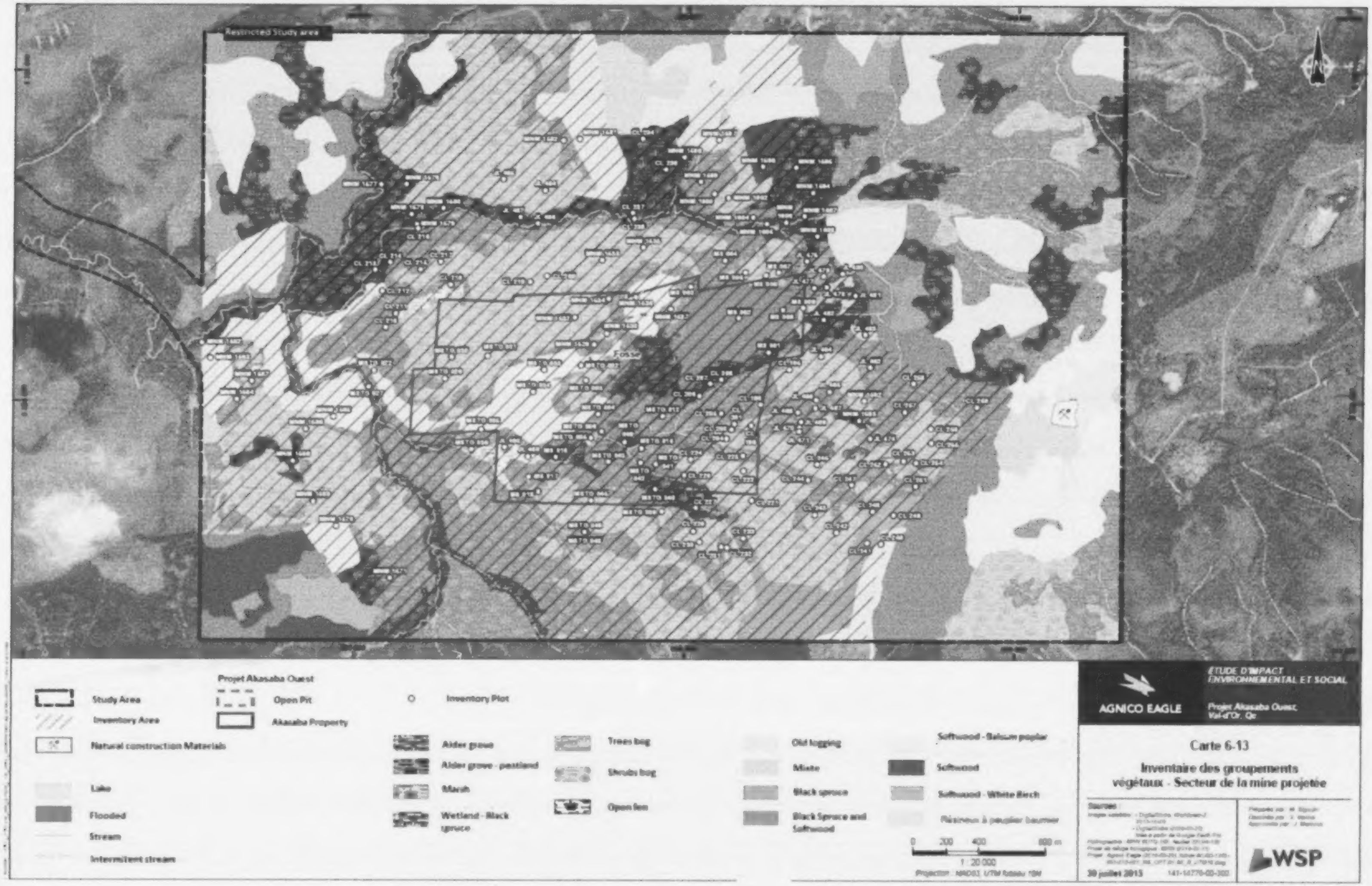
Available habitat

Terrestrial environment (Figure 11) covers 33% of the limited study area, amounting to 723 hectares of mixed and softwood stands. Three softwood species dominate: Black Spruce (*Picea mariana*), Jack Pine (*Pinus banksiana*) and Balsam Fir (*Abies balsamea*). Some areas have been logged more or less recently, and there are various traces of human disturbance, such as roads and trails, clearcuts and exploratory clearings (drilling) in the study area.

Wetlands cover 67% of the limited study area, totalling 1,475 hectares (Figure 11). Treed bogs are the largest and the most commonly found in the study area. They are characterized by thick deposits of organic matter. These bogs may be treed or covered by bushes. Watercourses are lined mainly with shrub swamp dominated by Speckled Alder and fens. These wetlands harbour a greater variety of herbaceous species and bushes than treed bogs (WSP, 2015).

Wetlands are likely to be used by migratory birds and birds at risk feeding, nesting, breeding and rearing grounds, as well as migration rest areas

Figure 11 Distribution of plan communities providing habitat for migratory birds and birds at risk


Restricted Study area
FOSSE
Projet Akasaba Ouest
Study Area
Open Pit
Inventory Plot
Inventory Area
Akasaba Property
Natural construction Materials
Alder grove
Alder grove - peatland
Marsh
Wetland - Black spruce
Trees bog
Shrubs bog
Open fen
Old logging
Mixte
Black spruce
Black Spruce and Softwood
Softwood - Balsam poplar
Softwood
Softwood - White Birch
Résineux à peuplier baumier
Lake
Flooded
Stream
Intermittent stream
0 200 400 800 m
1 : 20 000
Projection : NAD83, UTM fuseau 18N
AGNICO EAGLE
ÉTUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
Projet Akasaba Ouest, Val-d'Or, Qc
Carte 6-13
Inventaire des groupements végétaux - Secteur de la mine projetée
Sources :
30 juillet 2015
141-14770-00-300
WSP

(WSP, 2015a)

Migratory birds

In order to determine which birds are using the limited study area, the Proponent used various sources of existing data, conducted inventories in 2014 and noted chance observations during field work. Taking into account existing data, over 100 bird species are likely to frequent the study area at different times of the year.

The inventories conducted in 2014 in and around the limited study area identified 75 bird species for which nesting is categorized as "possible" to "confirmed" (WSP, 2015). In summer (nesting season), the Proponent estimated the total population of nesting landbirds in the limited study area at around 21,916 nesting pairs (WSP, 2016b). The most abundant species are thought to be the White-throated Sparrow, the Nashville Warbler, the Magnolia Warbler and the Ruby-crowned Kinglet. The study area would likely not be used by aquatic birds, waterfowl and shorebirds during the nesting season. These groups of birds prefer aquatic environments, such as mud flats, lagoons, lakes and rivers, which are not found in the study area.

During spring and fall migration, the Proponent recorded nearly 160 species. Some shorebird species may use the study area's peat bogs, but the absence of mud flats and pools probably limits such use (WSP, 2016b). During migration, the study area is likely to be used more by landbirds as resting and feeding grounds (WSP, 2016a).

In winter, 30 species were recorded, including several resident species such as the Ruffed Grouse, Spruce Grouse, woodpeckers, corvids, titmice and finches, as well as more northerly species migrating southward, like the Gyrfalcon, the Iceland Gull, the Glaucous Gull, the Snow Bunting and the Lapland Longspur.

Birds at risk

The inventories revealed the presence of two species at risk: the Common Nighthawk and the Olive-sided Flycatcher. The Canada Warbler, the Rusty Blackbird and the Short-eared Owl may also be using the Project site, since there is suitable nesting habitat for them there, but they were not seen during inventorying.

The Common Nighthawk nests chiefly in open ground areas, such as dry, bare areas, gravel beds, old industrial sites and recent clearcuts (less than 5 years old). There is 2.1 hectares of potential nesting habitat (a gravel bed) in the limited study area. Clearcuts at the Project site are too old to be considered suitable for the species because of the height of the trees (WSP, 2016b). No species-specific inventory has been made, but landbird inventories have twice recorded the Common Nighthawk. These were individuals flying and feeding above clearcuts.

Shrub swamp and fens of more than 5 hectares were considered as potential nesting habitat for the Olive-sided Flycatcher. In the limited study area, 345.3 hectares of such habitat have been mapped, including 23.6 hectares at the Project site (WSP, 2016b). The Proponent's inventories have tracked the Olive-sided Flycatcher over a kilometre away from the mine site (WSP, 2016b), but the species has not been seen or heard at the site.

Mature and mixed regenerating hardwood stands were selected for mapping potential habitat for the Canada Warbler, as were regenerating softwood stands in the richest ecological types. The study area had 50.5 hectares of potential nesting habitat for this species, including 23.8 hectares that would be affected by the Project. According to the Proponent, the softwood stand is likely to be most affected. It is located where the overburden and non-acid-generating waste rock would be dumped. Yet this stand is thought to be of little nesting potential for the Canada Warbler (WSP, 2016b). The inventories did not find any individuals, and none was reported in the data consulted by the Proponent in and around the limited study area (WSP, 2016b).

In identifying and mapping potential habitat for the Rusty Blackbird, the Proponent looked at marshes, shrub swamps of more than 1 hectare and treed bogs and fens of more than 5 hectares with pools. Of the 465.7 hectares of estimated potential habitat for this species, 21.4 hectares would be affected by the Project (WSP, 2016b). During inventories, no Rusty Blackbirds were present in the study area, and none was reported in the data consulted for the study area and its periphery (WSP, 2016b).

Treed bogs and open fens are potential habitat for the Short-eared Owl in the study area. The 358.13 hectares of bog in the limited study area would be potential habitat for this species of which 7.09 hectares would be affected by the Project. During inventories, no Short-eared Owls were seen in the study area.

Anticipated effects

According to the Proponent, the Project's adverse effects on migratory birds, including birds at risk, were potentially associated with loss and alteration of habitat due to the construction of the mine, mortality and destruction of eggs and nests caused by felling and equipment traffic, and disturbance due to noise, vibration and lighting.

The Proponent produced a plan of specific measures for wildlife, in which they identify and describe all the measures they would undertake to apply in carrying out the Project. The Proponent estimated that the Project's effect on migratory birds and birds at risk would be minor. The Proponent's view was that the magnitude of the effect would be low, given the small extent of the mine site, the presence of alternative habitats nearby and the small number of birds that would be disturbed. The extent of the effect would be local, since a limited portion of bird populations have all or part of their home range within the mine site. The duration of the effect would be moderate, since even if some habitat is permanently affected, several bird species could use open or replanted areas once the mine site is restored. The Proponent substantiated its conclusions with the following arguments.

Loss and alteration of habitat

Loss of dry and wetland habitat is likely to have the biggest effect on migratory birds and birds at risk. Such loss would occur chiefly during the construction phase, when the site is being transformed by felling and topsoil removal. The loss would force the birds that use this habitat for nesting or on migration to move to similar habitat beyond the mine site, where intraspecific competition may become sharper as a result of the increased density of individuals of the same species. In all, the carrying out of the Project is likely to cause loss of 93 hectares of habitat, of which some 60 hectares is wetland and 33 hectares dry land (WSP, 2017). About 1,110 nesting pairs of landbirds may be affected by this habitat loss (WSP 2016b). The effect would be felt chiefly in the softwood and regenerating stands, where some 990 nesting pairs of birds would lose nesting habitat. However, the Proponent reported that territory bordering the Project site is not disturbed and offers similar habitat (WSP, 2016b).

Loss of nesting habitat for specific birds at risk breaks down as follows:

- no loss for the Common Nighthawk [9];
- 23.6 ha for the Olive-sided Flycatcher;
- 23.8 ha for the Canada Warbler;
- 21.4 ha for the Rusty Blackbird; and
- 7.1 ha for the Short-eared Owl.

Though the Common Nighthawk was found twice in the Proponent's inventories, there was no potential habitat for this species at the Project site. The Olive-sided Flycatcher was the only birds at risk found in the study area during inventories. The Proponent estimated that loss of nesting habitat for this species would affect 1 to 2 nesting pairs. The Proponent stated that the individuals affected by the loss could resort to other suitable habitat in the limited study area given its abundance (WSP, 2016a).

During operation, the effects of water table drawdown around the pit may dry out some wetland habitat. This desiccation would not be on a scale different from natural seasonal variations in wetland water levels (WSP 2016a). Accordingly, this desiccation was expected to have few consequences, if any for the prevailing plant species, which are also capable of growing on drier land. [10] Changing wetland water levels would have no effect on the migratory birds or birds at risk using these habitats.

In the closure phase, the mine site would be restored. Some nesting pairs of landbirds may profit from the restored habitat, which would resemble the region's softwood stands. After the mine site would be rehabilitated, 40 hectares of vegetation would be permanently lost to the flooded pit and waste mine rock piles, which the Proponent did not plan to restore (WSP, 2015).

The Proponent stated that there would be no effect on aquatic birds, waterfowl or shorebirds, since there is no large body of open water or wetlands with pools at the Project site. The creation of a retention pond and a polishing pond for mine water may attract aquatic birds and waterfowl. In the unlikely event of these birds using these ponds, the Proponent asserted that there would be no risk of contamination of the birds, since the accumulated water is unlikely to contain concentrations of contaminants high enough to harm the birds.

In order to reduce the adverse effect on terrestrial and wetland environments, the Proponent committed to implement the following mitigation measures:

- prohibit movement of machinery and vehicles outside the work area;
- during felling, pay special attention to vegetation on the edge of the work area to avoid damaging it. As far as possible, avoid felling trees beyond the clearance limits and into watercourses;
- for replanting, ensure that seed mixes are free of exotic invasive species. Select seeds from indigenous species appropriate to the hardiness zone;
- implement a wetland compensation plan.

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[9] One effect of the project may be creation of habitat for the Common Nighthawk.

[10] These are facultative plant species which, with a probability ranging from 67% to 99%, may be found both in wetlands and on drier ground. Taken from:

http://www.mddelcc.gouv.qc.ca/rapportsurleau/Etat-eau-ecosysteme-aquatique-Flore-situationCauses.htm

The Proponent also undertook to conduct agronomic monitoring of the effectiveness of the replanting of disturbed areas following the gradual restoration work and the closing of the mine. The Proponent intended to implement monitoring in the closure phase to validate the use of restored areas by migratory birds and birds at risk. This monitoring would take place in years 1, 5 and 10 after restoration. It would also help assess the effectiveness of the bird habitat rehabilitation measures which the Proponent planed to undertake during the restoration work (perches in wetlands, establish marsh within the mine water retention pond, bare ground around the perimeter of the pit for the Common Nighthawk, etc) (WSP, 2016b). The Proponent also committed to conduct a follow-up program of the effects of water table drawdown on wetlands while the pit is operating in order to confirm that drawdown has no effects on plant species.

Mortality and disturbance

During construction, if felling is carried out during the breeding season, birds' nests may inadvertently be destroyed (incidental take). During operation, cleared areas at the mine site may be used by the Common Nighthawk for nesting. It is thus possible that while the mine is operating, workers may come across nests on the ground, especially on the overburden pile (WSP, 2016b).

According to the Proponent, birds may flee areas bordering the work site either temporarily or permanently, even abandoning nests, if disturbance by noise and vibration is too intense or lasts too long. The effect may vary depending on the sensitivity of each species to noise and vibration. The birds may move away and use other areas further from the work, provided that they find there the conditions and room that they seek.

During operation, the effect of lighting would likely be barely perceptible around the installations, since the lighting would be optimally directed, toward the ground (WSP 2015 et 2016a). According to the Proponent, the Common Nighthawk may even benefit from the swarming of insects around mine lighting sources when feeding.

In order to reduce the adverse environmental effects in terms of mortality and disturbance, the Proponent undertook to implement the following mitigation measures:

- carry out felling outside of the breeding season (May 15 to August 30). As far as possible, felling would be done in winter;
- where felling would be done during the nesting period, the Proponent committed to avoid nest destruction by first carrying out an ornithological survey;
- apply a wildlife management plan that takes account of protection of migratory birds and birds at risk.

6.2.2 *Views expressed*

Federal authorities

Baseline

Environment and Climate Change Canada considered the description of avifauna to be adequately documented and indicative of the study area. Each of the main biotopes was proportionally inventoried relative to the area occupied in the study area. The presence of the Canada Warbler, the Olive-sided Flycatcher and the Rusty Blackbird was well documented. Potential habitat for each species were adequately mapped and inventoried. With regard to the Common Nighthawk and the Short-eared Owl, Environment and Climate Change Canada was of the view that inventorying efforts could have been better targeted. The inventory used to characterize the presence of the Common Nighthawk was not species-specific, and not all potential habitat for the Short-eared Owl was covered. It is thus possible that densities for these species were underestimated. Environment and Climate Change Canada confirmed that habitat for these birds at risk is generally abundant in the study area, and also regionally.

Environment and Climate Change Canada identified that since November 15, 2017, the Barn Swallow and the Bank Swallow were added to Schedule 1 of the *Species at Risk Act*. The Bank Swallow may make use of mine infrastructure, such as borrow pits and stockpiles of granular materials. In doing so, the residency now comes under the protection of that *Species at Risk Act*. Thus, destruction of a colony may require the issue of a permit. Therefore, if necessary, the specific measures plan for wildlife developed by the Proponent may have to be updated.

Project effects

Environment and Climate Change Canada was of the view that the residual effects on migratory birds are unlikely to have serious consequences on healthy and resilient populations to the extent that the mitigation and monitoring measures are implemented promptly. However, Environment and Climate Change Canada considered the Proponent to have underestimated the residual effects on birds at risk. Moreover, all the mitigation measures proposed by the Proponent were pertinent to reducing the Project's effects on migratory birds and birds at risk. Although the Proponent underestimated the Project's residual effects on birds at risk and that recovery programs identify habitat loss as a potential threat to their recovery, Environment and Climate Change Canada was of the view that the Project would not result in significant adverse effects for birds at risk. These are widely distributed species which, according to the Proponent's inventories, make little use, if any of the project area.

Loss and alteration of habitat

Environment and Climate Change Canada was of the view that the potential environmental effects on wetlands and their functions have been properly assessed, but remained concerned about the potential effects of water table drawdown on wetlands (in the operation phase), which could result in loss or alteration of habitat for migratory birds and birds at risk that require such habitats. A follow-up program should be put in place to measure the effects of pit dewatering on wetlands.

With regard to species at risk, the recovery programs for the Common Nighthawk (Environment Canada, 2016a), the Olive-sided Flycatcher (Environment Canada, 2016b) and the Canada Warbler (Environment Canada, 2016b) and management plans for the Rusty Blackbird (Environment Canada, 2015) and Short-eared Owl (Environment Canada, 2016d) identified loss or degradation of habitat as being potential threats to the recovery or maintenance of these species. Therefore, Environment and Climate Change Canada considered that loss or degradation of habitat caused by the Project may result in local or regional effects on populations of these species and their recovery. Environment and Climate Change Canada recommended that suitable habitat be created birds at risk. Specifically, the Olive-sided Flycatcher and the Rusty Blackbird be considered as an essential factor to be taken into account when restoring the mine site and in the choice of Projects that the Proponent would carry out to offset loss of wetlands.

Lastly, despite the Proponent's explanations, Environment and Climate Change Canada was concerned about the presence mine water retention and polishing ponds at the site, which may contain contaminants harmful to birds. The Proponent would be required to implement a monitoring program to document use of the ponds by birds in order to track mortality or unusual behaviour and adopt appropriate corrective measures.

Mortality and disturbance

Environment and Climate Change Canada was of the view that several activities, in addition to felling, may interfere with nesting and result in incidental takes. The Proponent's commitment to felling outside the nesting season did not eliminate all risk of incidental take. The Department indicateed that the nesting season for birds in general in the Val d'Or region runs from mid-April to the end of August.

The Common Nighthawk is an aerial insectivore whose breeding success depends on the abundance and diversity of insects. Contrary to what the Proponent reported, Environment and Climate Change Canada stated that artificial lighting may have adverse effects on insects and result in the fragmentation or decline of populations of certain species that serve as prey for the Common Nighthawk (Environment Canada, 2016c).

Environment and Climate Change Canada also asserted that terrain cleared during the construction and operation phases may have appeal as nesting habitat for the Common Nighthawk. Individuals nesting on such terrain may be disturbed by noise and vibrations, but also nests, eggs or young risk being crushed by machinery and workers. Individuals may also collide with vehicles operating in such areas.

Environment and Climate Change Canada recommended periodically updating the specific measures plan for wildlife to account for regulatory amendments, in particular revision of the status of wild species by the Committee on the Status of Endangered Wildlife in Canada or under the *Species at Risk Act*. Indeed, such amendments may require additional measures be put in place to mitigate the Project's effects on species subject to changes in their status.

Environment and Climate Change Canada recommended establishing a monitoring and follow-up program that integrates adaptive measures to address uncertainties associated with the residual effects of the Project on birds at risk.

First Nations

The First Nations of Lac Simon and Kitcisakik pointed out the need to develop and implement a bird monitoring program to verify the effectiveness of the mitigation measures during the construction and operation phases.

Public

The Conseil régional de l'environnement de l'Abitibi-Témiscamingue recommended avoiding breeding periods for species at risk and species of interest identified during felling work.

6.2.3 *Agency's analysis and conclusion*

The Agency is of the view that the residual adverse effects on migratory birds and birds at risk would not be significant. The magnitude of the effect would be moderate, given the small area of habitat that would be destroyed and the low risk of mortality and disturbance. The extent of the effect would be site-specific, since habitat loss and disturbance would not extend beyond the boundaries of the Project site. Although the risk of mortality and disturbance would cease when the site closes (in the sixth year from the start of operations), the duration of the effect would be long because the habitat regeneration period would take more than a reproduction season. Habitat losses associated with excavation of the pit would be irreversible, but those linked to the rest of the mine site would be reversible, since the Proponent plans to replant it.

Limited loss and alteration of habitat

Habitat loss is estimated at 93 hectares, comprising 33 hectares of terrestrial environment and 60 hectares of wetlands (WSP, 2017). The area of habitat which would be destroyed at the mine site is small relative to the habitat available in the limited study area. Migratory birds and birds at risk would have access to similar habitat in the limited study area. Also, some habitat loss would be offset by the creation of wetlands (wetland compensation plan) and forest (caribou habitat compensation plan, section 6.4). Restoration of the mine site on closing would also involve restoration of disturbed habitat and limit the permanent loss to 40 hectares. Creation of habitat suitable for birds at risk, especially the Olive-sided Flycatcher and the Rusty Blackbird, should be an essential consideration in restoring the site and in the choice of wetland compensation plans.

Unlikely mortality and minor disturbance

A number of Project-related activities (during all phases) may cause inadvertent destruction of the nests and eggs of migratory birds. As well as harming birds, nests and eggs, this "incidental take" may have long-term consequences for populations of migratory birds in Canada, in particular through the cumulative effect of many separate incidents. The "incidental take" of nests or eggs is an infringement of the *Migratory Birds Convention*. Activities associated with various phases of the Project would disturb nesting pairs due to noise, vibrations and lighting in the work area and on the periphery of the site. This disturbance may result in nest desertion or flight to other areas and would increase the stress on species less tolerant of disturbance.

Key mitigation measures for avoiding significant effects

The Agency determines the primary mitigation measures needed to ensure that there is no significant adverse environmental effect on migratory birds and birds at risk. The Agency takes into account the mitigation measures proposed by the Proponent, the expert advice of Environment and Climate Change Canada, and input from First Nations and the public. These measures are as follows:

- Implement the recommendations in the Avoidance Guidelines of Environment and Climate Change Canada.[11] Specifically, the Proponent would:
  - avoid conducting potentially destructive or disruptive activities during sensitive periods and at sensitive locations in order to reduce the risk of adverse effects on birds, their nests and eggs. The Proponent would take account of the fact that the nesting season for most land birds runs from mid-April to August 30 in the Val d'Or region;
  - develop and implement appropriate prevention and mitigation measures to minimize the risk of incidental take and help maintain viable populations of migratory birds and birds at risk. If active nests (with eggs or young) are discovered, [12] work would be interrupted and a buffer zone established until nesting is finished (species specific measures may be developed in collaboration with Environment and Climate Change Canada);
  - educate workers to the potential presence of the nests of migratory birds and birds at risk. This measure should apply to all Project phases, especially closure (rehabilitation and closing), since certain sectors of the mine site where activities have ceased for some time may have been colonized by migratory birds and birds at risk for nesting;
- create habitat suitable for birds at risk, especially the Olive-sided Flycatcher and the Rusty Blackbird, when rehabilitating the site and choosing wetland compensation plans.

Need for follow-up and follow-up requirements

Before construction, and in consultation with the Lac Simon and Kitcisakik First Nations and the appropriate authorities, the Proponent would develop a follow-up program to determine the effectiveness of the mitigation measures implemented and preclude harm to migratory birds, including birds at risk. This follow-up would cover:

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[11] https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/guidelines.html

[12] Searches for active nests by specialists are not recommended by Environment and Climate Change Canada

- use of mine water ponds by birds. If bird mortality in ponds or unusual behaviour is observed, the Proponent would contact Environment and Climate Change Canada to determine the appropriate corrective measures to be undertaken;
- the effectiveness of replanting on restored sectors of the mine site;
- use of restored sectors by migratory birds;
- birds at risk, including validation of the use of restored sectors;
- the effect of water table drawdown on wetlands.

This program would be established from the start of the mine construction phase in order to determine the actual influence of the pit and water table drawdown on wetland water levels. The follow-up would continue beyond the pit operation phase (through the restoration phase and until the pit is fully flooded) in order to determine long-term effects after operations. Should the piezometer follow-up program results reveal hydrological or ecological changes that would cause adverse environmental effects (loss of function) different from those expected, additional mitigation measures or additional offsetting measures would be proposed and implemented.

6.3 Transboundary Environmental Effects

Greenhouse gases are atmospheric gases that absorb and re-emit infrared radiation resulting in the warming of the lower levels of the atmosphere. They are recognized as being one of the causes of climate change that can have various effects on ecosystems and human health (*Canadian Environmental Assessment Act* [CEAA], 2016). The main greenhouse gases include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), ozone (O3), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). Greenhouse gas estimates are usually reported in tonnes of carbon dioxide equivalent units [13] per year (CEAA, 2016). These gases disperse at the global scale and are, for the purposes of the *Canadian Environmental Assessment Act*,2012 considered transboundary environmental effects.

According to an update provided by the Proponent in April 2018, greenhouse gas emissions attributable to all phases of the Project were estimated at a total of 63,031 tonnes of carbon dioxide equivalent, including 40,457 tonnes of carbon dioxide equivalent for mining activities and 22,574 tonnes of carbon dioxide equivalent for transportation activities. Spread out over the six years of the Project, the Project's greenhouse gas emissions would be approximately 10,500 tonnes of carbon dioxide equivalent per year. The emissions of the Project represent a low contribution to the provincial and national emissions.

Pursuant to its analysis, the Agency concludes that the Project is not likely to cause significant transboundary adverse effects related to greenhouse gas emissions, since the volume of the Project's greenhouse gas emissions is low magnitude.

The following sub-sections describe the baseline conditions, the essential elements to the Proponent's analysis, provide the expert departments' advices on which the Agency based itself to determine on the importance of the effects of the Project on the transboundary effects owing to greenhouse gases.

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[13] CO2, CH4 and N2O emissions are calculated by multiplying the emission rate of each substance by its global warming potential compared with the CO2 equivalent.

6.3.1 Baseline conditions

Under the Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, the Quebec government collects data on greenhouse gases released by Quebec businesses. As a result, anyone who runs an establishment that releases an amount of greenhouse gases into the atmosphere equal to or higher than 10,000 tonnes of carbon dioxide equivalent per year is required to report emissions every year. At the federal level, under the *Canadian Environmental Protection Act* (1999), facilities that produce more than 50,000 tonnes of carbon dioxide equivalent annually are required to submit an annual report of their emissions.

6.3.2 Proponent's assessment of environmental effects

Anticipated effects

According to the Proponent, the transboundary effects of greenhouse gas emissions would be minor. The Proponent proposed mitigation measures to control the emission of greenhouse gases. They are presented in Appendix H. The Proponent supported its conclusions with the following points:

The Project's greenhouse gas emissions

The main greenhouse gas-emitting activities during the Project construction, operation and completion phases are those powered by fossil fuels. These activities include transportation by road across the mining site and to the Goldex plant, the crushing and grinding of the ore, the loading and unloading of the ore and waste rock and the operation of machinery. (WSP, 2016b).

The greenhouse gas emissions were estimated according to the requirements under Quebec's Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere. According to the Proponent, the greenhouse gas emissions attributable to the Project were estimated at a total of 63,031 tonnes of carbon dioxide equivalent, for the entire lifecycle of the Project, including 40,457tonnes of carbon dioxide equivalent for mining activities and 22,574 tonnes of carbon dioxide equivalent for transportation activities. Annually, the Project activities would produce on average an emission rate slightly higherthan 10,000 tonnes of carbon dioxide equivalent. The Proponent indicated that the greenhouse gas emissions as part of the Project would come mainly from the release of carbon dioxide. The emissions released from blasting were not calculated owing to the unavailability of a low emission factor and, therefore, were not included in the overall tally. Fugitive fluorocarbon emissions were not accounted for, also owing to their low emissions. According to the Proponent, their contribution to all other sources would be negligible (less than 2% of all greenhouse gases emitted as part of the Project.)

Comparison of the Project's emission rate with Quebec and Canadian statistics

The Project is part of the Industrial sector according to the Quebec inventory of greenhouse gas emissions 1998–2013. The Project's emissions are more specifically associated with the sub sector of Industrial Combustion. In 2013, emissions from this sub sector were at 13.28 megatonnes of carbon dioxide equivalent. The Project's emissions would represent 0.08% of emissions from this sub sector. Across Quebec, the Project's emissions would represent 0.015% of total emissions reported in 2013.

The Project is part of the Emissions-intensive and Trade-exposed Industries category according to the National Inventory Report: Greenhouse Gas Sources 1990–2014. In 2014, emissions from this category were at 76 megatonnes of carbon dioxide equivalent. The Project emissions would represent 0.015% of emissions from this category. Across Canada, the Project emissions would represent 0.002% of total emissions reported in 2014.

The Proponent proposed measures to reduce the greenhouse gas emissions resulting from the Project activities:

- Building an electrical line to connect the mine to the existing electrical network;
- Using utilitarian vehicles in hybrid mode or with alternate fuels; and
- Reducing the number of vehicles and equipment idling, and installing heaters in the booths to reduce idling.

6.3.3 Points of view expressed

Federal Authorities

Environment and Climate Change Canada noted that greenhouse gas emissions that would be produced by the Project were assessed using a recognized methodology outlined in Quebec's Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere. Environment and Climate Change Canada remarked that the Project's contribution to greenhouse gas emissions is not significant provincially or federally and should not have a significant effect on the country's greenhouse gas emissions.

Environment and Climate Change Canada considered that additional mitigation measures can be implemented by the Proponent to reduce greenhouse gas emissions, in particular:

- Place primary ore crusher loading and conveyor points in such a manner as to minimize transportation distances and optimize the positive effect of the use of gravity when transporting material;
- Ensure that heavy machinery, vehicles and equipment are in good operating order by carrying out routine maintenance;
- Collect merchantable timber from the land by clearing trees to reduce biomass combustion;
- Carry out excavation and backfilling work so as to minimize the need to use materials and crushed rock from the borrow pits;
- Carry out routine maintenance on construction equipment;
- Use biodiesel and natural gas generators; and
- Reforest as soon as possible.

Indigenous Groups

Lac Simon and Kitcisakik First Nations did not make any comments.

Public

The Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT) proposed to include the environmental impacts of transportation of sulphide concentrate between the Goldex plant and the La Ronde plant, including impacts related to truck traffic, greenhouse gas emissions and additional security measures required. In addition, CREAT suggested the establishment of a shuttle service between the mine site and the City of Val-d'Or to take into account the workers' movements in the project's total emissions. The Agency has provided this information to the proponent for its consideration.

6.3.4 Agency analysis and conclusion

Analysis of the effects

The Agency estimates that the transboundary environmental effects related to greenhouse gases would not be significant. The Agency considers that the magnitude of greenhouse gas emissions would be low, since the volume of the Project's greenhouse gas emissions would be slightly higher than the threshold of mandatory reporting of 10,000 tonnes of carbon dioxide equivalent per year according to Quebec's Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere, below the threshold of 25,000 tonnes of carbon dioxide equivalent per year under Quebec's Regulation respecting a cap-and-trade system for greenhouse gas emission allowances, which requires businesses to register on the carbon market, and slightly higher than the threshold of 10,000 tonnes of carbon dioxide equivalent per year requiring mandatory reporting per Canada's Greenhouse Gas Emissions Reporting Program established under the *Canadian Environmental Assessment Act, 1999.*

Key Mitigation Measures to Avoid Significant Effects

The Agency does not identify key mitigation measures to be implemented.

Need for and Requirements of Follow-up

The Agency does not require follow-up.

6.4 Species at Risk

Under section 79(2) of the *Species at Risk Act* (SARA), the Agency, as the Responsible Authority, is required to determine the adverse effects of the Project, regardless of significance, on SARA-listed species (Schedule 1 of the *Species at Risk Act*) and their critical habitat. The Agency also must ensure that measures are taken to prevent, mitigate and control the adverse effects on species at risk and that appropriate monitoring and follow-up programs are implemented if the Project is carried out. The measures must be consistent with applicable species recovery strategies and action plans.

Species at risk that may be affected by the Project are the olive-sided flycatcher, the common nighthawk, the Canada warbler, the rusty blackbird, the peregrine falcon, the short-eared owl, the woodland caribou, the little brown myotis, the northern myotis, the wood turtle and the snapping turtle. Migratory and non-migratory birds are addressed in Section 6.2.

As a result of its analysis, the Agency determines that the Project:

- is likely to adversely effect woodland caribou, specifically the Val-d'Or herd, and its critical habitat, the QC1 range; and[14]
- is not likely to cause harm to the little brown myotis and the northern myotis or to the snapping turtle and the wood turtle.[15]

The subsections that follow describe the baseline conditions and the essential elements of the Proponent's analysis and provide expert departmental advices as well as comments from Indigenous peoples and the public on which the Agency relied when determining the adverse effects of the Project on species at risk and their habitat, excluding the migratory and non-migratory birds that are addressed in Section 6.2.

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[14] Recovery Strategy for the Woodland Caribou, Boreal population (Rangifer tarandus caribou) in Canada (2012)

[15] Critical habitats for these species are not designated within the meaning of the *Species at Risk Act*

6.4.1 *Woodland caribou*

Baseline conditions

The woodland caribou population of Val-d'Or (Val-d'Or herd) has experienced a significant population decline in recent decades, from about 80 individuals in 1974 to about 50 in the 1990s, to about 20 in the early 2000s and fewer than 20 individuals beginning in 2012 (WSP, 2015a). According to the latest inventory carried out in 2016 by the provincial government, the Val-d'Or herd consists of around 20 individuals (WSP, 2017b). Although the population seems to have been relatively stable since 2010, its replacement rate is too low based on some indicators (low percentage of fawns in the population, low pregnancy rate, an unstable pregnancy rate and a high mortality rate) (WSP, 2015a).

The boreal population of woodland caribou is designated as a species at risk in Canada under the *Species at Risk Act*. According to the federal Recovery Strategy for the Woodland Caribou, Boreal population (*Rangifer tarandus caribou*), in Canada (Environment Canada 2012), the Project would be located within the QC1 range (Figure 12) recognized as the range of the Val d'Or herd. The entire QC1 range is designated as critical habitat. The disturbance rate in the QC1 range is estimated at 65% (Environment and Climate Change Canada, 2017). According to the federal recovery strategy, current distribution area conditions are unlikely to maintain a self-sustaining population, as a minimum of 65% undisturbed habitat is required.

In Quebec, the woodland caribou [16] is designated vulnerable under the Act respecting threatened or vulnerable species. The Val-d'Or herd is considered in the Quebec recovery plan for the Woodland Caribou 2013-2023 (Ministère du Développement durable de l'environnement, de la Faune et des Parcs, 2013) as an isolated population that is greatly affected by the development of the site and the use of resources of all kinds. The strategy specifies that the residual habitats associated with this population are scarce and fragmented (Ministère du Développement durable de l'environnement, de la Faune et des Parcs, 2013). Based on its instability, size and isolation, tracking and protection measures for the Val-d'Or herd have been implemented by the Government of Quebec. For the Val-d'Or herd, the main goal of the provincial plan is to maintain occupation of the current distribution area and consolidate the herd so that it reaches about 50 individuals.

The Government of Quebec has prepared the *Plan d'aménagement du site faunique du caribou au sud de Val-d'Or pour la période 2013–2018* (Figure 13), which provides more specific guidelines for management and protection in the area frequented by the Val-d'Or herd (Department of Natural Resources, 2013). The areas considered essential to the maintenance of this herd have been included in a 434 square kilometres biodiversity reserve located 5 kilometres south of the Project site (Protected Zone 1C). The objective of the biodiversity reserve is to fully conserve caribou habitat conditions, including habitats used from mid-April to mid-November, from the period before calving to the post-rut period (WSP, 2015a). The Project would be in Zone 1A of the area covered by the management plan. Zone 1A is a buffer zone around the areas most frequented by caribou, where certain logging and mining practices are permitted. The disturbance rate for the entire area covered by the Val-d'Or caribou management plan is 87.2%, while that for Zone 1A is estimated at 89%. Human activities contribute to the majority of these disturbances (WSP, 2015a).

The Proponent described the potential habitat for caribou in the study area (WSP, 2016a). The wetland dominates the landscape; there are shrub swamps, bogs and fens. Fens are more likely to provide food sources for female caribou and their fawns. The terrestrial environment in the study area has a very low proportion of mature coniferous forests that can provide suitable habitat for boreal caribou. The mature coniferous stands are mainly located in the islets and riparian strips along streams and wetlands. The study area did not include any mature forest that could provide suitable habitat for boreal caribou, especially in winter. Recent cuts with protection for regeneration and stands less than 30 years old cover the majority of the terrestrial environment. According to the Proponent, the study area had low habitat potential for boreal caribou, even considering the growth of stands at more mature stages (WSP, 2016a).

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[16] Whether it is called the "woodland caribou" under the provincial law or boreal woodland caribou under the federal law, it is still the same species, *Rangifer tarandus caribou*.

Based on the biophysical attributes described in Appendix H of the Recovery Strategy for the Woodland Caribou (Environment Canada, 2012), the Proponent identified and mapped habitats with the biophysical characteristics required by caribou to complete their life processes at the Project site (93 hectares) as well as in a 500-metre buffer zone around the infrastructure (357 hectares).[17] Of the 450 hectares of critical habitat, 32% is large-scale habitat, 4% is calving habitat, and 7% is winter habitat (WSP, 2017b). Of the 450 hectares of critical habitat, 231 hectares are permanently damaged (Eacom Forest Road and Sabourin Lake Road and their 500 metre buffer zone).

Currently, caribou do not appear to use the Project site and the limited study area, due to disturbances from human activity (WSP, 2016b). The Proponent made this observation based on the locations of the collared individuals who were tracked from 1995 to 2015 by Quebec's Department of Forestry, Wildlife and Parks. Telemetry data obtained during this period showed that two individuals were located in the mine footprint while six individuals were located within a 5 kilometre radius of the mine (Figure 13). The tracked caribou visited the study area at the beginning or end of winter as well as in summer, periods when caribou are more mobile. However, the locations of collared caribou are not an exhaustive portrait of land use by all caribou in the Val-d'Or herd.

Proponent's assessment of environmental effects

Anticipated effects

According to the Proponent, woodland caribou could be affected by mobilization of the worksite, ground preparation, installation of permanent and temporary infrastructure, transportation and traffic. The Project would have an adverse effect on the Val-d'Or herd due to habitat loss, disturbance and fragmentation, individual mortality, noise disturbance, light pollution and human presence. The Proponent proposed several mitigation measures to protect the Val-d'Or herd. The mitigation meausres are presented in Appendix H. The Proponent concluded that implementation of the mitigation measures, including the compensation plan, would ensure that there would be no effect on caribou and their habitat (WSP, 2017b). The Proponent put forward the following arguments.

Habitat loss, disturbance and fragmentation

The Proponent stated that the Project would result in a direct environmental disturbance within the boundaries of the Project site (the pit, the waste rock piles, the infrastructure, the ore transport path, the temporary access road and the power line) during periods of construction and mine operation. This disturbance would continue after the completion of operations until the forest environment has recovered and conditions are favourable for woodland caribou habitat (WSP, 2016a).

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[17] According to the Recovery Strategy for the Woodland Caribou, Boreal population (*Rangifer tarandus caribou*) in Canada (Environment Canada, 2012), the Proponent must include a 500 metre buffer zone around its infrastructure when characterizing the caribou habitat or when calculating habitat loss.

The surface area of critical habitat disturbed by the Project would be 219 hectares (WSP, 2017b). The Proponent stated that the Project is unlikely to cause loss of connectivity, due to the small area of suitable habitat in and around the Project's zone of influence (5 kilometres) and also because caribou have not used this area extensively in recent decades.

Transportation of ore on the Eacom forest road would intensify truck traffic. Considering the Projected traffic volume (approximately six trucks per hour) and the magnitude of the mine activities, the Proponent believed that the activities could hinder caribou access in the area north of the road and thus create a barrier effect. However, the Proponent pointed out that this barrier effect is unlikely since the northern portion of Eacom Road is characterized by very low quality habitat for boreal caribou, and disturbances from human activities (resort, mine site, railway, Route 117) are themselves a barrier to the north for caribou (WSP, 2016a).

The Proponent stateed that, since females are known for their inter-annual fidelity to their home range, the use of the road and the mine site would have no effect on the fidelity of the females to the home range during calving and rearing of fawns (May to August). Their home range, for the last two decades, has been located more than 5 kilometres from the Project's zone of influence, in the Caribous-de-Val-d'Or Biodiversity Reserve (WSP, 2016b).

The Proponent stated that the main measures to minimize the effects of the Project on boreal caribou and their habitat would be the following:

- Minimize the footprint of the mine site.
- Use the Eacom forest road rather than build the ore transport road originally planned for the Project (WSP, 2017b).

Moreover, the Proponent agreed to implement the following specific mitigation measures:

- Revegetate the mine site (with the exception of waste rock piles and the pit) and the mine site connection road to Eacom Road, at the end of operations, by planting softwood species to favour the return of suitable habitat conditions for woodland caribou. The Proponent proposed monitoring of the regeneration and, if necessary, interventions to control the development of hardwood species.
- Compensate for boreal caribou habitat loss and alteration by closing and reforesting forest roads to recreate 876 hectares of critical habitat (ratio of 4 hectares created for each hectare destroyed)

Compensation Plan for boreal caribou habitat loss

The Proponent proposed to close and reforest softwood forest roads in order to achieve the caribou compensation goal. The Proponent stated that these measures are consistent with the Quebec recovery plan for the woodland caribou as well as with the Plan d'aménagement du site faunique du caribou au sud de Val-d'Or (WSP, 2017b). Quebec's Department of Forestry, Wildlife and Parks considers that the closure and reforestation of forest roads is an effective and sustainable measure to compensate for the loss of habitat and respects the principle of no net loss.

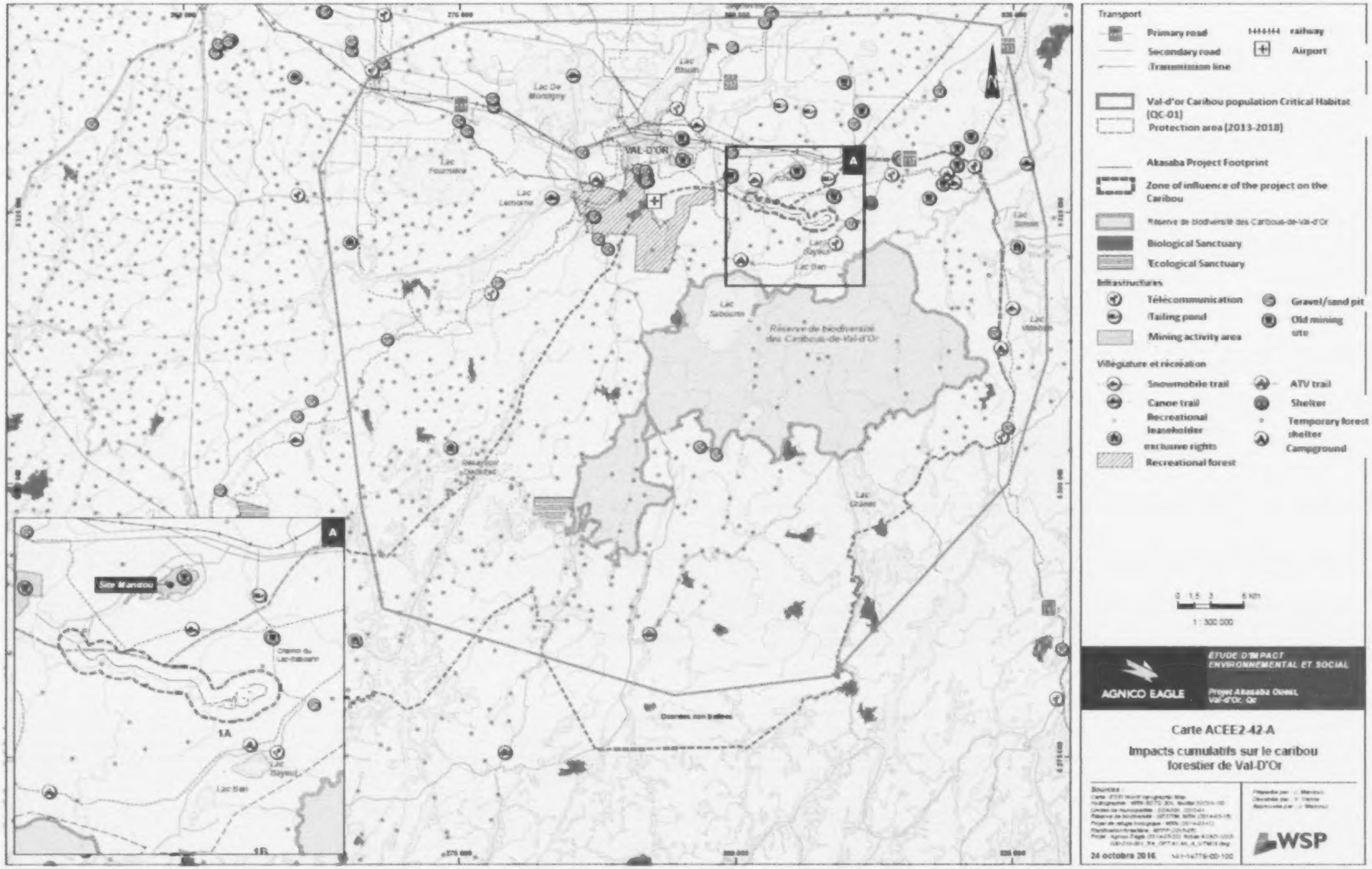
Quebec's Department of Forestry, Wildlife and Parks is working with the Proponent and has identified several areas of the Plan d'aménagement du site faunique du caribou au sud de Val-d'Or that should be prioritized for the closure of forest roads. These areas contain habitats whose ecological functions are superior in quality and quantity to the habitats that would be disturbed by the Project. The Proponent demonstrated that Zone 1E (Figure 13) has good potential for closure and reforestation (WSP, 2017b).

The Proponent planned to begin the work of closing and reforesting the forest roads in the summer of 2018, that is, as soon as mine construction begins. The Proponent indicated that, if necessary, compensation work could continue in subsequent years until the required 876 hectares are completed (WSP, 2017b).

To ensure vegetation recovery and the effectiveness of the forest road closures, the Proponent proposed to carry out monitoring over a 10 year period: annually for the first 5 years, then in year 7 and year 10. If the proposed measures do not meet the predetermined performance indicators, the Proponent indicated that it agrees to implement corrective measures to achieve the compensation objectives (WSP, 2017b).

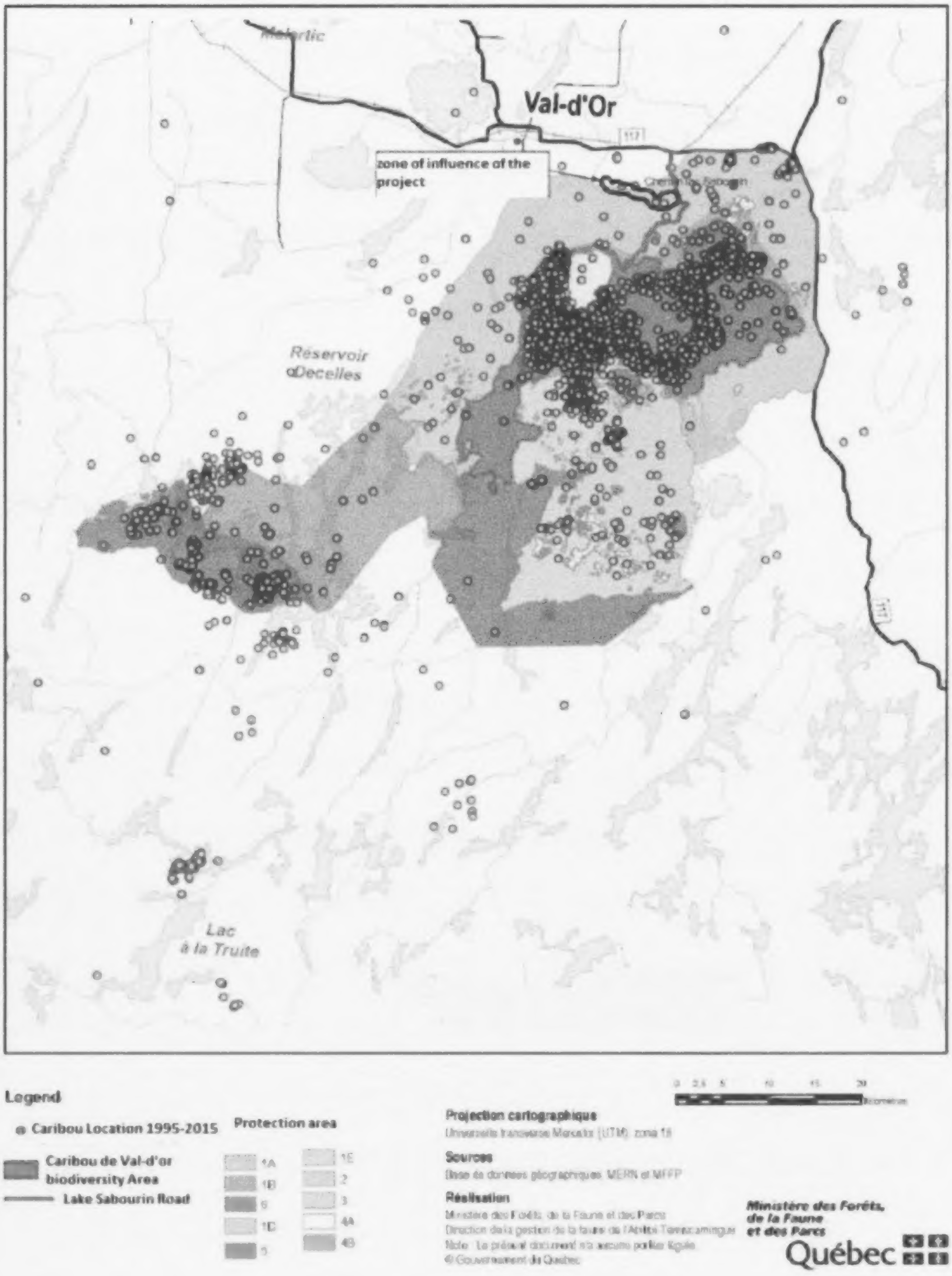
The Proponent stated that there is little uncertainty about the proposed measures' success and effectiveness in fostering suitable caribou habitat. The Proponent indicated that these would adequately offset the project's effects and that there would be no effect on caribou and caribou habitat following their implementation (WSP 2017b).

Figure 12 QC1 Caribou Range


Transport
Primary road
railway
Secondary road
Airport
Transmission line
Val-d'or Caribou population Critical Habitat (QC-01)
Protection area (2013-2018)
Akasaba Project Footprint
Zone of influence of the project on the Caribou
Réserve de biodiversité des Caribous-de-Val-d'Or
Biological Sanctuary
Ecological Sanctuary
Infrastructures
Télécommunication
Gravel/sand pit
Tailing pond
Old mining site
Mining activity area
Villégiature et récréation
Snowmobile trail
ATV trail
Canoe trail
Shelter
Recreational leaseholder
Temporary forest shelter
exclusive rights
Campground
Recreational forest
0 1.5 3 6 km
1 : 300 000
ÉTUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL
AGNICO EAGLE
Projet Akasaba Ouest, Val-d'Or, Qc
Carte ACEE2-42-A
Impacts cumulatifs sur le caribou forestier de Val-D'Or
Sources :
24 octobre 2016
WSP
VAL-D'OR
Lac De Montigny
Lac Blouin
Lac Fournière
Lac Lemoine
Lac Sabourin
Réserve de biodiversité des Caribous-de-Val-d'Or
Lac Bayeul
Lac Ben
Lac Granet
Lac Simon
Lac Villebon
Site Manitou
A
1A
1B

(WSP, 2016b)

Figure 13 Plan d'aménagement du site faunique du caribou au sud de Val-d'Or for 2013-2018


Malartic
Val-d'Or
117
zone of influence of the project
Chemin du Sabourin
Réservoir Decelles
Lac à la Truite
117
0 2.5 5 10 15 20 Kilomètres
Legend
Caribou Location 1995-2015
Caribou de Val-d'or biodiversity Area
Lake Sabourin Road
Protection area
1A
1B
6
1D
5
1E
2
3
4A
4B
Projection cartographique
Universelle transverse Mercator (UTM), zone 18
Sources
Base de données géographiques: MERN et MFFP
Réalisation
Ministère des Forêts, de la Faune et des Parcs
Direction de la gestion de la faune de l'Abitibi-Témiscamingue
Note : Le présent document n'a aucune portée légale
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Ministère des Forêts, de la Faune et des Parcs
Québec

WSP, November 2016, Response to the second request for information from the Agency, page 87.

Mortality of individuals (increased predator efficiency and collision with vehicles)

The Proponent stated that it has already been scientifically demonstrated that linear corridors, such as roads, allow wolves to travel at higher speeds and be more efficient in their predatory efforts on large ungulates. However, the Proponent believed that due to the density of traffic on Eacom Road, wolves would not be favoured and would not increase predation on boreal caribou (WSP, 2016a).

The Proponent stated that road accidents involving caribou deaths may have an adverse effect on vulnerable populations. For the Project, this risk seems unlikely because Eacom Road, used for transporting ore, would be located on land currently not frequented by caribou and unlikely to be in the future. The Proponent also indicated that caribou avoid intensively used roads, which helps to reduce the risk of collisions (WSP, 2016a). The Proponent stated, however, that despite the low risk of collisions with road vehicles, the addition of collision mortality would have a significant effect on the Val-d'Or herd because of its small population (WSP, 2017b).

To reduce the risk of predation and collision, the Proponent agreed to implement the following mitigation measures:

- Use softwood species during mine site restoration and control the development of deciduous species that would attract moose and consequently wolves, which prey on caribou.
- Implement a training and awareness program for employees and contractors: description of the species and its habitat, specific mitigation measures, and the management plan for sightings. When hired, all new employees and contractors would be required to attend training sessions.
- Implement an internal communication system (the mine's employees and sub-contractors) and an external one (involving Quebec's Department of Forestry, Wildlife and Parks and Eacom, the forest company) to report any caribou sighting or evidence of caribou presence on Eacom Road to drivers of ore transport trucks.
- If caribou are present in the Project footprint,
  - transport the ore by convoy;
  - intensify the transport schedule during the day;
  - decrease speed or stop traffic on Eacom Road;
  - temporarily halt the mine activities.

The Proponent indicated that it would implement a monitoring program to document visual evidence of boreal caribou presence and compliance with mitigation measures.

Disturbances due to noise, light and human presence

The Proponent believed the noise level generated by the mine activities, in the worst-case scenario, would be between 25 and 27 decibels A at the northern boundary of the Caribous-de-Val-d'Or Biodiversity Reserve. Measurements of ambient noise show that 60% of the time, the noise level in the baseline conditions (without the Project) was louder than 30 decibels A. This means that the noise generated by the Project would mostly be masked by ambient noise. Overall, the Proponent believes that the effect of the noise generated by the Project on the northern limit of the Caribous-de-Val-d'Or Biodiversity Reserve, within which the calving grounds are located, would be low (WSP, 2016a).

Based on its night light sectoral study, the Proponent concluded that very few effects on caribou are expected because very little light would be emitted outside the mine site (WSP, 2016b).

In order to reduce disturbances due to noise, light and human presence, the Proponent agreed to implement the following mitigation measures:

- Apply the planned mitigation measures when caribou are present (described above).
- Provide mobile equipment with a broadband audible alarm to signal when reversing.
- Maintain machine mufflers and catalysts.
- Implement an awareness program to teach machinery operators to avoid making excessive noise with buckets and falling objects.
- Use light fixtures that provide subdued lighting.
- Direct the light toward the surface to be illuminated.
- Limit, to the extent possible, the periods when lights are used and the duration of their use.
- Install fixed lights to prevent light from spilling out of the spaces to be illuminated.
- Maintain vegetated buffer zones to limit Projection of light into surrounding areas.
- Compensate for individual mortality and noise and light disturbance by closing forest roads (without reforestation) to create 9 linear kilometres free from human activities that could disturb caribou (vehicular traffic, including snowmobiles and quads).

Compensation Plan for collision risk, noise and light disturbance

The Proponent proposed to close 9 kilometres of forest roads, which is the distance travelled by the ore transport trucks on the Eacom forest road. According to the Proponent, this measure could be effective before the Project effects become apparent. The effects of this measure would be beneficial in the short term by reducing disturbance by humans and collision risk in caribou-occupied areas. However, for the disturbance associated with land use by snowmobile, this measure would be effective over a 10- to 15 year period, at which time natural regeneration would completely obstruct the roads in winter (WSP, 2017b).

As with the compensation plan for habitat loss, Zone 1E, identified in the Plan d'aménagement du site faunique du caribou au sud de Val-d'Or, has good potential for road closure (WSP, 2017b).

In parallel with the road closure, the Proponent proposed an awareness program for land users, with information boards at the closing points.

The Proponent proposed to carry out a follow-up of the closure Project in the same way proposed for the habitat loss compensation plan.

Cumulative effects

"In Abitibi-Témiscamingue, boreal caribou were present from north of La Sarre to the middle of the present La Vérendrye Wildlife Reserve. In addition to the Val-d'Or herd, another population is still present north of La Sarre, straddling Quebec and Ontario. Hunting and habitat alterations have been increasing since the 19th century, causing a decline in populations" (Proceedings of the Adik, the Caribou symposium held in Val-d'Or, February 26, 2009; translation.) In 2016, there were only about 20 individuals in the Val-d'Or herd.

The Proponent believed that development of the city of Val-d'Or, the exploration and mining work, forestry operations, development of the public road network, and development of vacationing have contributed to the deterioration of caribou habitat and the decline of the Val-d'Or herd within the QC1 range. The adverse effects of these activities are still being felt and would continue in the future (WSP, 2017a).

According to the Proponent, the main source of disturbance is the forestry activities in the QC1 range. The significant effect of forestry on the disturbance rate is likely to persist until 2023. For example, in 2017, Eacom began construction of a new forest road approximately 35 kilometres long. In addition, according to the analysis and interpretation of the Plan d'Aménagement forestier intégré tactique 2013–2018, Région de l' Abitibi-Témiscamingue, Unité d'aménagement 083 51 (integrated tactical forest management plan for the Abitibi-Témiscamingue region, management unit 083-51), forestry activities would be a major obstacle to achieving the 65% undisturbed habitat target within the QC1 range (WSP, 2017a).

The Proponent indicated that, in the QC1 range, two reserves contribute to the protection of boreal caribou habitat, namely the Caribous-de-Val-d'Or Biodiversity Reserve and the planned Piché-Lemoine forest biodiversity reserve (WSP, 2016a).

According to the Proponent, in the event of a complete failure of the compensation measures it proposes, the effects of the Project on the Val-d'Or herd and its habitat would be negligible in the QC1 range, since the disturbance rate would increase by 0.06% and would be localized in a portion of the area where habitats are of low quality and have historically been little used by the caribou.

Views expressed

Federal Authorities

In general, Environment and Climate Change Canada was satisfied with the description of critical habitat and the description of the habitat that has the biophysical characteristics required by the boreal caribou to complete its life processes. The Val-d'Or herd is located in the Boreal Shield ecoregion (centre) and the categories used by the Proponent to establish potential habitat (large-scale, calving, and winter) are consistent with the biophysical characteristics identified in Table H 4c of the Recovery Strategy (Environment Canada, 2012).

Environment and Climate Change Canada was satisfied with the assessment of the Project effects on caribou and caribou habitat. The identification and description of the potential effects of carrying out the Project appear to be complete and consistent with the threats identified in the Recovery Strategy (Environment Canada, 2012).

Environment and Climate Change Canada considered all existing habitats, whether disturbed or non-disturbed, within a range of less than 65% undisturbed habitat, as critical habitat, with the exception of permanent disturbances and their 500-metre buffer zone. The Proponent's interpretation of the permanent and temporary habitat disturbances caused by human activities is justified. The Project would result in the direct loss of 219 hectares of critical habitat and affect connectivity within the distribution area. The destruction of critical habitat within the QC1 range is contrary to the population and distribution objectives identified in the Recovery Strategy, namely, to the extent possible, to stabilize and provide self-sufficiency to non-self-sufficient local populations.

As presented by the Proponent, the Project is likely to cause disturbance to individuals due to noise and light. The Boreal Caribou Recovery Strategy indicates that noise and light disturbances cause short-term behavioural and physiological responses in the species, including startle responses, increased heart rate, and increased production of glucocorticoids, and that sustained or repeated disturbances may cause caribou to avoid certain areas and reduce the use of suitable habitat for the species. Several scientific studies (Polfus et al., 2011; Johnson et al., 2015, Boulanger et al., 2012) have demonstrated that mining activities could influence caribou behaviour for several kilometres around mine sites.

Environment and Climate Change Canada believed that the effects of predation and other sources of threats are only partially considered by the Proponent. Although the Proponent mentioned that the movement of predators is facilitated by roads, it does not consider the phenomenon of apparent competition. This phenomenon is well documented for boreal caribou. Temporary disturbances, such as logging (restoring beds where there are more deciduous trees), favour populations of alternative prey such as moose or beaver (which benefit from the abundance of deciduous trees). This abundance of alternative prey proportionally increases the abundance of predators such as grey wolves or black bears. The increased abundance of predators increases opportunities for encounters with boreal caribou and mortality risks for the caribou.

In general, Environment and Climate Change Canada was satisfied with the mitigation measures proposed by the Proponent to mitigate the effects on caribou and their habitat during all phases of the Project. Environment and Climate Change Canada noted, however, that several measures are based on the ability to quickly detect caribou near work areas and the ore transportation route.

The Proponent proposed to close and reforest the access roads to its site as well as certain areas of the mine site at the end of the Project. Due to the various follow-ups that the Proponent may have to carry out once the mining operation is completed (for example, the monitoring of the water quality of the mining effluents under the *Metal Mining Effluent Regulations* or Directive 019), the Proponent may be unable to close and reforest as quickly as it suggests.

Environment and Climate Change Canada recognized that the Proponent has worked constructively to present the best possible compensation plan to offset habitat loss, collision risk and noise and light disturbance. The measures in the Proponent's compensation plan are relevant and correspond to two general strategies in the Recovery Strategy. Environment and Climate Change Canada believed that, if the Project proceeds, the implementation of the Proponent's proposed compensation plan would be essential to mitigate the effects of the Project on individuals and habitat. However, Environment and Climate Change Canada believed that the compensation plan does not eliminate all the effects on the Val-d'Or herd, particularly for the following reasons:

- Collision mortality risks cannot be offset by road closures. Environment and Climate Change Canada was of the view that collision mortality risks are always present and should be reduced to a minimum. Although the Proponent considered the risk of collision to be low due to current caribou land use, if an individual was killed in a collision, the effects on the population would be significant.
- The habitat recreated by the Proponent would take several decades to acquire the biophysical characteristics sought by the boreal caribou and thus constitute a real gain of habitat for the species. Environment and Climate Change Canada therefore considered that there would be a direct loss of critical habitat until the restored habitat becomes functional habitat for caribou.
- The actual effectiveness of road closures according to the methodology presented, particularly its effectiveness in preventing off-road vehicles and snowmobiles from entering the enclosed territory, has not been demonstrated. Road closures would not be effective in blocking access to snowmobilers for the first 10–15 years, after which time the planted seedlings would have reached a size sufficient to create an obstacle.

Environment and Climate Change Canada also believed that the compensation plan monitoring program should be improved in terms of success indicators and duration.

Environment and Climate Change Canada was satisfied with the Proponent's commitment to implement a monitoring program during construction, operation and closure. The awareness program for workers and contractors is undoubtedly an important aspect of monitoring. However, Environment and Climate Change Canada was concerned about the Proponent's ability to detect caribou quickly and effectively in the Project area or on the road. Effective detection influences the success of subsequent measures that would be implemented to prevent caribou mortality and disturbance. Environment and Climate Change Canada recommended that, if a collision occurs, the Proponent would promptly notify the regional branch of Quebec's Department of Forestry, Wildlife and Parks. New mitigation measures should therefore be identified and implemented, in collaboration with the Ministry of Forests, Wildlife and Parks, to prevent further collision mortalities from occurring.

Environment and Climate Change Canada was satisfied with the cumulative effects analysis presented by the Proponent and recognized that the majority of the cumulative effects within this distribution area are generated by forestry-related activities. In addition, according to the most up-to-date information available to the department, the disturbance rate in the QC1 range would have increased by 5% since 2012, reaching a rate of 65% disturbed habitat.

Environment and Climate Change Canada believed that despite the implementation of the mitigation measures and despite the usefulness of the compensation plan, the Project would decrease connectivity within the QC1 range, could compromise achieving the goal of 65% undisturbed habitat, and would result in effects on individuals and increase the risk of mortality to some extent. Due to the very high disturbance rate in the Val-d'Or herd's range, and in the absence of a range plan[18] or equivalent document from the province, any additional habitat losses, even if they contribute little to the cumulative effects, may be detrimental to the survival and recovery of this population.

Environment and Climate Change Canada concluded that the Project is likely to have residual effects that could affect the survival or recovery of the Val-d'Or herd.

Indigenous Groups

The Lac-Simon First Nation was particularly concerned about the effects that Project activities –construction phase, blasting and ore transport – could have during the calving and rearing periods. The Lac-Simon First Nation believed that every effort should be made to protect the remaining individuals of the Val-d'Or herd.

The Lac-Simon and Kitcisakik First Nations argued that the lack of recent sightings of caribou at the mine site did not necessarily mean that the area was not critical to the survival and recovery of the species, and that the Project would likely result in the destruction of habitat critical to the Val-d'Or woodland caribou.

The Lac-Simon and Kitcisakik First Nations mentioned the Proponent's involvement in a woodland caribou conservation program developed by Quebec's Ministry of Forests, Wildlife and Parks, which includes capturing females to increase the survival rate of the fawns. They are concerned that the high rate of permanent disturbance in the environment means that when fawns become adults, they would not have enough suitable habitat to complete their life cycle.

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[18] According to the Recovery Strategy, the development of range plans will make it easier to determine whether an activity is likely to result in the destruction of critical habitat. Range plans identify activities that may result in direct habitat loss, degradation and/or fragmentation given local conditions. Any development project incompatible with such a plan may be considered as likely to result in the destruction of critical habitat.

The Lac-Simon and Kitcisakik First Nations provided preliminary comments on the Proponent's proposed compensation plans to offset caribou habitat loss, individual mortality, and noise and light disturbance.

The Lac-Simon First Nation stated that it was satisfied, particularly since the Proponent had identified Zone 1E as having potential for the completion of the compensation plan.

The position of the Kitcisakik First Nation was quite different. For this Nation, accepting a Project and even a compensation plan on the land is a sign of contempt for a species doomed to die out. The Algonquin Nation of Kitcisakik refused to be complicit in the disappearance of the caribou, a species with which the Algonquins have a spiritual connection. The loss of the caribou would be a bereavement for the Algonquins.

Public

The Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT) recommended that all workers be made aware of the fragility of the Val d'Or herd of woodland caribou. The Proponent responded positively to this recommendation and has included training and an awareness program for employees in the mitigation measures it is committed to implementing. The CREAT has also recommended to the proponent to compensate for the net loss of 53 hectares of terrestrial environments and 64 hectares of wetlands, especially bogs and adjacent stands.

Agency analysis and conclusion

Based on the advice from Environment and Climate Change Canada, the information provided by the Proponent, and comments from the Lac-Simon First Nation and the Kitcisakik First Nation, the Agency estimates that the Project could result in adverse effects on the woodland caribou boreal population, specifically the Val-d'Or herd, and its critical habitat, the QC1 range.

The Agency believes that the proposed measures – the monitoring and follow-up program to prevent, mitigate and control adverse effects on the Val-d'Or herd and the QC1 range – are appropriate and should be implemented if the Project goes ahead, since according to Environment and Climate Change Canada these measures are consistent with the Recovery Strategy. However, despite the proposed measures, the Agency believes that the Project could jeopardize the achievement of the 65% goal for undisturbed habitat, and would effect individuals and to some extent increase the risk of mortality.

6.4.2 *Little brown myotis and northern myotis; wood turtle and snapping turtle*

The little brown myotis, northern myotis, snapping turtle and wood turtle could be found on the Project site, as there is suitable habitat there. However, they were not observed during inventories conducted by the Proponent. A recovery strategy under the *Species at Risk Act* was implemented in 2015 for the little brown myotis and the northern myotis (Environment Canada, 2015a). In 2016, Environment and Climate Change Canada produced a recovery strategy for the wood turtle population (Environment Canada, 2016e) and a proposal for a snapping turtle management plan (Environment Canada, 2016).

Baseline conditions

Little brown myotis and northern myotis

The northern myotis is generally closely associated with the boreal forest, while the little brown myotis is found in a wider variety of habitats, including riparian, forest and human environments. During the summer, the two species may use both tree structures (natural cavities or those excavated by woodpeckers, cracks under the bark, etc.) and buildings or rock structures as roosts for resting or rearing their young (maternity roosts) (WSP, 2015).

The Proponent conducted bat surveys in the study area during the breeding and the migration periods (WSP, 2016b). This inventory confirmed the presence of three species of bats: the big brown bat, the silver-haired bat and the hoary bat. However, neither of the two species at risk were observed or detected. Generally, the results indicated that bats are more active during migration than during the breeding period (WSP, 2016b).

The potential of occurrence of bat hibernacula has been analyzed and is considered very low, or close to non-existent. According to the Proponent, the geological characteristics of the environment did not include many natural cavities: the topography of the site is flat and the water table is close to the surface of the ground (WSP, 2016b).

Snapping turtle and wood turtle

The snapping turtle frequents a wide variety of aquatic environments and generally uses marshes or ponds along rivers and small streams. The wood turtle usually frequents well-oxygenated meandering rivers and adjacent terrestrial environments (WSP, 2015).

The Proponent stated that the snapping turtle might be found in the limited study area, since the study area is at the northern limit of the species' known range. As for the wood turtle, although its presence has recently been reported in Abitibi, the Proponent believed that it is not present in the limited study area, since the study area did not contain any preferential habitat.

The study area included no ponds or lakes, and the peat bogs do not have sufficient open water for turtles and their hibernation. Only a few meanders, backwaters or widened secondary streams could be potential habitats for some species. The streams 2 and 3 (see Section 6.1) surrounding the Project site are generally very shallow and therefore do not provide favourable conditions for turtles (WSP, 2015).

The Proponent actively searched for turtles during its flora and fauna inventories, but has found none (WSP, 2015).

Anticipated effects

According to the Proponent, no effect is anticipated on the little brown myotis and the northern myotis since they are not found on the Project site. The Project site has summer habitats that are potentially suitable for these two species; however, based on the inventories, their presence has not been confirmed in this area. The research conducted has ruled out the potential presence of hibernation sites (WSP, 2016c).

The Proponent did not anticipate that the Project would have any effect on the two turtle species (WSP, 2016a). The wood turtle is not likely to be present. As the Project does not anticipate any encroachment on watercourses, there would be no risk of snapping turtle mortality.

However, the Proponent indicated that planned measures for the protection of fish and bird habitat would prevent any effect on the little brown myotis, northern myotis, snapping turtle and wood turtle, in case those species are present:

- Keeping a 15-metre strip of vegetation along Stream 3 would help protect the riparian turtle habitat.
- Avoiding deforestation during the nesting season would prevent wood turtle mortality, which may occur in the terrestrial environment of the mine site and prevent mortality of bats, which might use trees in summer for shelter.

The Proponent did not propose any monitoring or follow-up program.

Views expressed

Federal authorities

Environment and Climate Change Canada estimated that, according to the inventory results submitted by the Proponent, the Project would not have an effect on these species as they do not appear to be present in the study area. According to Environment and Climate Change Canada, no additional mitigation measures or monitoring or follow-up programs were required.

First Nations

The Kitcisakik First Nation stated that in recent years it has been conducting inventories of some species at risk in its territory as part of Projects funded by the Aboriginal Fund for Species at Risk. A snapping turtle was identified and photographed along Route 117 near Colombière, a few kilometres north of the Project. They were concerned about the effect of road traffic on the turtles.

This First Nation was also concerned about the decline of bats on its territory. Following a 2016 bat survey, the Proponent has determined that there are no hibernacula at the Project site. The Algonquin Nation of Kitcisakik indicated that it agrees with the Proponent's recommendations based on the bat inventory.

Public

No comments were received from the public on bats or turtles at risk

Agency analysis and conclusion

Based on the advice of Environment and Climate Change Canada, the information provided by the Proponent, and the comments of the Kitcisakik First Nation, the Agency is of the view that the Project is not likely to adversely affect the little brown myotis and the northern myotis. Hibernacula and maternity roosts are the critical habitats targeted by the Recovery Strategy for the Little Brown Myotis and the Northern Myotis (Environment and Climate Change Canada, 2015). None of these habitats are present on the Project site. The Project would not adversely affect critical habitat.

The Agency determines that the Project is not likely to adversely affect snapping turtles or wood turtles. The Project site does not have the characteristics of snapping turtle habitat and is outside the range of the wood turtle.

6.5 Aboriginal Peoples – Current Use of Lands and Resources for Traditional Purposes

In its Technical Guidelines for the Assessment of Current Use of Lands and Resources for Traditional Purposes, the Agency defines current use of lands and resources for traditional purposes as hunting, fishing, trapping, berry picking, cultural uses and other traditional uses of the land (for example, the gathering of medicinal plants or the use of sacred sites) and travel to participate in these activities. Current use of lands and resources for traditional purposes reflects practices or activities that are part of the distinctive culture of First Nations, which are common to First Nations and would likely be in the reasonably near future. Furthermore, uses that may have ceased due to external factors should also be considered if they can reasonably be expected to resume once conditions are restored.

According to the Agency, a significant residual adverse effect is one that would result in a high degree of disruption of traditional practices or activities by modifying the quantity and quality of available resources or access to traditional territory.

In order to determine the adverse effects on the current use of land and resources for traditional purposes, the Agency examines whether the Project could result in a change in access to land, in a perceived loss of resource quality (perception of contamination), and in a change in the availability of wildlife and plant resources for hunting, trapping and gathering. The effects of the Project could occur in the southern part of the territory covered by the *James Bay and Northern Quebec Agreement* [19] and in the territory traditionally used by the Kitcisakik and Lac Simon First Nations.

Based on its analysis, the Agency concludes that the Project is not likely to cause significant adverse environmental effects on the current use of lands and resources for traditional purposes by Indigenous people, taking into account the implementation of the mitigation measures:

- the construction, operation and closure of the Project would result in little change in access to traditional territory and land use;
- the Project is to result in minor changes in abundance of wildlife and plant resources;

The subsections that follow describe the baseline, the essential elements of the Proponent analysis, and provide expert departmental advices as well as comments from Indigenous peoples and the public on which the Agency has based its conclusion on the significance of Project effects on the current use of lands and resources for traditional purposes.

6.5.1 Baseline

The First Nation of Lac Simon is located on reserve lands,15 kilometres from the Project site on the west shore of Lac Simon. The First Nation of Kitcisakik is located approximately 50 kilometres from the Project site in the northern part of La Vérendrye Wildlife Preserve. "Since time immemorial, the Anishinabeg have inhabited what is now called Abitibi. Families and clans shared the territory for hunting, fishing, gathering, trapping, and other occupations, including the vicinity of the Akasaba West mine site (Council of the Anishnabe Nation of Lac Simon and the Department of Natural Resources of Lac Simon, 2015)". However, as reported by the Lac Simon First Nation:

> *"this sector has gradually been abandoned in recent decades, although some people still recount sporadic use of the premises. In fact, the mining development of the last century, the growing occupation of the territory by non-natives for hunting and vacationing, forestry operations as well as the creation of beaver reserves and Indian reserves and the implementation of the assimilation policies of the Indian Act have all contributed to displacing Indigenous populations to other sectors. Nevertheless, the Anishnabegs of Lac Simon do not consider themselves any less the guardians of the territory for the sake of future generations (Council of the Nation Anishnabe of Lac Simon and the Department of Natural Resources of Lac Simon, 2015)."*

Figure 14 presents a map illustrating the traditional territory of the First Nations of Lac Simon and Kitcisakik. The Council of the Nation Anishnabe of Lac Simon and the Department of Natural Resources of Lac Simon (2015) provided information on recent land use around the proposed mine site. They are as follows:

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[19] The Cree Nation Government informed the Agency that it did not anticipate any impact of the project on their rights and interests. As a result, the Agency has not analyzed the effects that changes in the environment that the project may have on their current use of lands and resources for traditional purposes.

- two Indigenous camps, one used in the 1940s and the other in the 1960s;
- a canoe trip used by a family in the 1960s for trapping beaver on the Bourlamaque and Sabourin rivers and on upstream and downstream streams;
- a goose and duck hunting site;
- some non-Indigenous camps used by members of the Lac Simon First Nation for short stays on moose hunting or trapping trips (including beaver, lynx and marten) between 1990 and 2012-2013;
- a birch bark harvesting site for crafts;
- a dozen moose hunting sites, mainly used in winter and visited by at least thirty members of the Algonquin Nation of Lac Simon between 1990 and 2012-2013;
- a few beaver trapping sites used between 1990 and 2012-2013;
- two records of caribou slaughtered in the 90s (over the last twenty years, the Lac Simon and Kitcisakik First Nations have voluntarily interrupted the hunt to protect the species).

Most of the hunting and trapping activities in the Project site area have been abandoned since 2012-13 due to the closure of logging roads that no longer allow snowmobiles to pass or because of the fear of food contamination due to the mining activities concentrated in the area (Council of the Nation Anishnabe of Lac Simon and Department of Natural Resources of Lac Simon, 2015). There are still some moose hunting areas to the north and south of the limited study area (WSP 2015a).

Today, most of the traditional activities are concentrated in the southern extended study area where the Grand Lac Victoria beaver reserve is located and north of Route 117. According to the information gathered by the Proponent during meetings with the two Algonquin First Nations, the Project's extended study area would be frequented by Lac Simon and Kitcisakik users primarily for winter moose hunting. Partridge would be hunted in the study area opportunistically, goose hunting would take place at Lac Herbin and in the vicinity of Lac Simon. The Algonquins mentioned that berry picking is practised in the vicinity of Lac Sabourin, and wild rice cultivation occurs in the northern part of the limited study area, far from the Project site.

Representatives of the Lac Simon and Kitcisakik First Nations confirmed to the Agency that woodland caribou are a subsistence species of cultural and spiritual importance. As part of the Caribou Forestry Project of the First Nations of Quebec and Labrador Sustainable Development Institute (2010), caribou were identified as a species that traditionally supported the Algonquin diet, along with moose and deer[20]. The importance of caribou in the diet has also been reported in the proceedings of the 2009 Adik, le caribou symposium held by the First Nation of Kitcisakik Forest Committee. Woodland caribou hunting has been deliberately interrupted in the face of population decline in order to protect it. The Lac Simon and Kitcisakik First Nations would resume hunting if the health status of the Val-D'Or caribou herd improved. The First Nation of Lac Simon is actively involved in protecting and the recovery efforts of the Val-d'Or caribou herd and is involved in the following committees:

- Local recovery committee for Val d'Or Caribou;
- Table of partners for the implementation of the action plan for woodland caribou management of the Quebec Department of Forests, Wildlife and Parks;
- Parallel table of First Nations requested by the Innu involving Algonquins, Huron-Wendat, Cree, Atikamekw and Naskapi.

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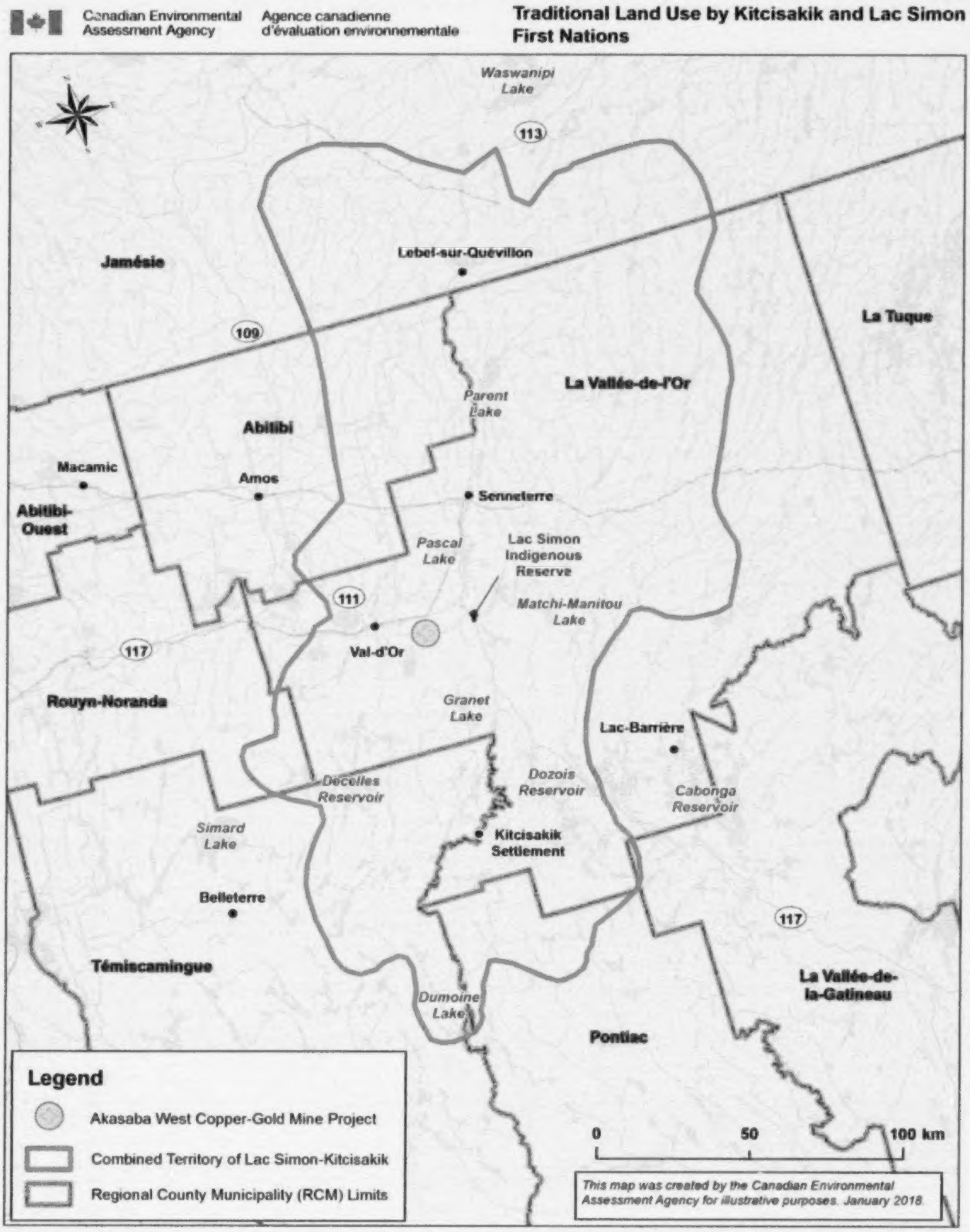
[20] Interview with a senior couple from Lac Simon

The First Nation of Lac Simon is also involved in the control of caribou predators, the bear and the wolf a program put forward by the Quebec Department of Forests, Wildlife and Parks.

The actions of the First Nations of Lac Simon and Kitcisakik demonstrated the importance of caribou in traditional activities and the importance of their recovery.

Figure 14 Traditional use of the land by the First Nations of Kitcisakik and of Lac Simon


Canadian Environmental Assessment Agency
Agence canadienne d'évaluation environnementale
Traditional Land Use by Kitcisakik and Lac Simon First Nations
Waswanipi Lake
113
Jamésie
Lebel-sur-Quévillon
109
La Tuque
Parent Lake
La Vallée-de-l'Or
Abitibi
Macamic
Amos
Senneterre
Abitibi-Ouest
Pascal Lake
Lac Simon Indigenous Reserve
111
Matchi-Manitou Lake
117
Val-d'Or
Rouyn-Noranda
Granet Lake
Lac-Barrière
Decelles Reservoir
Dozois Reservoir
Cabonga Reservoir
Simard Lake
Kitcisakik Settlement
Belleterre
117
Témiscamingue
La Vallée-de-la-Gatineau
Dumoine Lake
Pontiac
Legend
Akasaba West Copper-Gold Mine Project
Combined Territory of Lac Simon-Kitcisakik
Regional County Municipality (RCM) Limits
0
50
100 km
This map was created by the Canadian Environmental Assessment Agency for illustrative purposes. January 2018.

Source : WSP, 2015

6.5.2 Proponent's assessment of environmental effects

Anticipated effects

According to the Proponent, the Project's effect on the current use of lands and resources for traditional purposes would potentially be associated with changes in access and land use related to the perceived loss of the quality of resources and reduced success in hunting, trapping and resource gathering. The Proponent proposed a number of mitigation measures to protect current use and resources. They are presented in Appendix H. The Proponent estimated that the significance of the adverse effect on the current use of lands and resources for traditional purposes would be minor and that the effect would be only related to moose hunting. The magnitude of the effect would be moderate, considering that moose hunting is a valued traditional activity. The extent is considered limited because the affected territory is restricted. The extent of the effect would be short, as the Project has a life of 7 years. In support of its conclusion, the Proponent made the following arguments:

Change in access and use of the territory

The construction of the mine's infrastructure would encroach on 93 hectares that could not be used by the First Nations of Lac Simon and Kitcisakik during the construction and operation phases of the mine. Following complete restoration of the mining site, a permanent area of approximately 40 ha, corresponding to the portion of the pit that would be flooded and part of the waste rock dumps, could no longer be used by the Algonquins.

In 2016 and 2017, the Proponent carried out a characterization of the initial content of metals in plants (blueberries, Labrador tea, and birch bark and leaves) that could be consumed by the Indigenous population and by game (e.g., moose and bear). The results of this characterization indicate that the metal concentrations measured in blueberries, Labrador tea and white birch are low (WSP 2017). According to the Proponent, these results demonstrated that the limited study area is a growth medium that is not strongly influenced by local or regional industrial activities. Considering the short period of the Project, the results of the atmospheric modelling and the management of the mining waters it proposes, the Proponent considered that the Project would have no effect on the quality of the country food.

Change in wildlife and plant resources

The Proponent believed that the potential effect associated with changing the abundance or distribution of moose, black bear and beaver, species valued by the Algonquin Nations, is very low. The proponent indicated that moose and black bear are species that use the majority of available forest and wetland types, with a preference for disturbed areas. The habitat on the outskirts of the mine site is similar to the Project site, in terms of forest cover, and could provide suitable habitat for moose and black bear. In winter, construction and ore transportation could upset moose and consequently, Indigenous hunting activities.

The Proponent added that the potential effect on the beaver is of minor importance since the Project did not include any direct encroachment into the watercourse. On the other hand, deforestation in the south and southwest portions of Stream 3, already used by beaver, could have an effect on a few individuals.

The Proponent believed that no Project effect is anticipated on traditional Indigenous wildlife harvesting activities (e.g., fishing, caribou, goose and partridge hunting, and berry picking) considering these activities take place far from the Project site with the exception of moose hunting. As for moose hunting, the Proponent believed that it is possible for Indigenous people to move their activity to other areas.

Proposed mitigation measures, monitoring and follow-up

The Proponent agreed to put in place mitigation measures to reduce the adverse effects of the Project on the current use of lands and resources for traditional purposes, in particular:

- inform the Lac Simon and Kitcisakik First Nations of the nature and timing of the construction, operation and restoration of the mine;
- educate mine workers about Indigenous moose hunting activities;
- set up a 15-meter vegetation strip along Stream 3 (beaver habitat);
- at the closure of the mine site, characterize the levels of metals in the plants (blueberry, Labrador tea and birch bark and leaves) to determine whether the Project has had an effect on the quality of plants consumed by First Nations and the hunted species.

Several of the mitigation and monitoring measures described above to reduce the effects of the Project on fish habitat and bird habitat (wetlands) would also help reduce the effects on current use of lands and resources for traditional purposes, including:

- prohibit the movement of machinery outside work areas;
- revegetate the mine site, when closed, with indigenous plant species;
- develop and implement a wetland compensation plan;
- monitor the effectiveness of revegetation activities during the restoration of the mine site.

6.5.3 Views expressed

Federal authorities

Fisheries and Oceans Canada indicated that the Project is unlikely to cause serious harm to fish and fish habitat. Environment and Climate Change Canada believed that the Proponent can put in place effective measures to protect the quality of the water in which fish live (see Section 6.1).

Environment and Climate Change Canada was of the view that the Project is not likely to cause significant effects on migratory birds (see Section 6.2).

Environment and Climate Change Canada agreed that the Project contributes minimally to the disturbance of the caribou distribution area (QC1) and that the Proponent's proposed caribou habitat compensation plan is required to reduce the effects of the Project on the caribou and on its essential habitat. All mitigation measures proposed by the Proponent (Section 6.4) are adequate to reduce disturbance and accident risks. However, Environment and Climate Change Canada believed that a residual effect persists despite the compensation plan and mitigation measures, and that this effect, taken in a cumulative effects context, could be detrimental to the survival and recovery of the Val-d'Or caribou population due to the precarious state of the herd (see Section 6.4).

Health Canada believed that the risk assessment of country food intake could have been more comprehensive and recommended that monitoring metal concentrations in country food also be done during the operating period (see Section 6.6).

First Nations

The First Nation of Kitcisakik raised concerns about the effects of the Project on the beaver, the bear and the wolf, which are trapped species on the territory. According to the Proponent, despite the potential Project effects on the distribution of terrestrial wildlife populations, the work and effects generated should not alter the integrity of the populations present in the area since large wooded areas and undisturbed wetlands area are present at the periphery. In addition, the Proponent agreed to developing and implementing a wetland compensation plan. The First Nation of Lac Simon recognized that many wetlands in the area that are widely used by wildlife could benefit from this compensation plan.

The First Nations of Lac Simon and Kitcisakik expressed concerns about the effects of the Project on the Val-d'Or caribou herd. They emphasized the importance of all wildlife, not only for hunting but also culturally and spiritually. They mentioned that woodland caribou have not been hunted for 20 years, not because of lack of interest, but rather by community choice to protect the Val-d'Or herd. They indicated that if woodland caribou were not at risk, they would still be part of their hunting activities. Kitcisakik First Nation mentioned however that it does not intend to resume caribou hunting as the moose settled into the territory and the moose was integrated into the diet.

The two Algonquin Nations expressed concerns that the territory is already contaminated by the mining activity and would be more contaminated by the Project. Some members of the First Nations of Kitcisakik and Lac Simon mentioned that they would not return to this area even after the mine was closed and restored for fear of the effects of the pollution. To address this concern, the Proponent planned to compare the metal content in plants (blueberries, Labrador tea, and birch bark and leaves) after mine site remediation to that obtained during the initial characterization of 2016 -2017.

The First Nations of Kitcisakik and Lac Simon also recommended the use of species already naturally present in the territory for revegetation, which the Proponent has agreed to do where possible.

Finally, the First Nations of Kitcisakik and Lac Simon did not agree with the Proponent's conclusions that the effects of mine site operations are minor on the Indigenous presence and that the closure of the site would have a positive effect on the use of the land and resources for traditional purposes. For the First Nations of Kitcisakik and Lac Simon, any disturbance on their ancestral territory has an effect on the use of the territory. Although the territory is currently used less, the significant increase in the population of the Algonquins and the renewed interest of younger generations in the practice of traditional activities on the territory could result in an increase of it use in the coming years.

Public

The public did not provide comments on the current use of lands and resources for traditional purposes.

6.5.4 *Agency analysis and conclusion*

The Agency is of the view that the residual adverse effects on current use of lands and resources for traditional purposes would not be significant given the mitigation measures described below. The magnitude of the effects would be moderate considering, on the one hand, the high social value of the current use of the territory on the part of the First Nations of Lac Simon and Kitcisakik and, on the other hand, the fact that the Project site is naturally less conducive to fishing (small streams with fewer fish at the head of the watershed) and waterfowl hunting (no waterbody large enough) but, without being unique, supports moose hunting, caribou hunting (in as far as possible), small game hunting and plant harvesting. The Project would not result in effects that alter the quantity and quality of available resources and access to the land so that current use is compromised in the limited study area or traditional territory of the First Nations of Lac Simon and

Kitcisakik [21]. The extent of the effects would be limited because the changes would be felt at the Project site or a small area of the traditional territory. The extent of the effects would be long since the changes in uses would be felt beyond the closure of the mine, over several hunting seasons. Effects on current use of lands and resources for traditional purposes would be partially reversible as at least 50 hectares of the Project footprint would be restored. Additionally, several members of the First Nations of Lac Simon and Kitcisakik may permanently abandon use of the restored site for reasons of perception of contamination.

Change for a small area in access to the territory and perceived loss of quality of resources

The Agency notes that the First Nations of Lac Simon and Kitcisakik have had several opportunities to transmit to the Proponent their traditional knowledge of the wildlife and plants and their use of the land. The Agency recognizes the high value access to the territory has for the First Nations of Lac Simon and Kitcisakik. The Agency understands that the perception of contamination in the study area would lead the First Nations of Lac Simon and Kitcisakik to reduce their use in the Project study area. In fact, this is already the case, and the First Nations confirmed that they no longer frequent the limited study area because of disturbances related to its mining past and doubts about the quality of the country food there. The arrival of the Project could contribute to the permanent abandonment of the site and its area of influence. The Agency also believes that because the Project footprint is less than 100 hectares during operations and about 40 hectares after closure, access to the territory would be compromised only for a small area of the traditional territory (Figure 14). Furthermore, the Agency has no indication from the First Nations of Lac Simon and Kitcisakik that the mine site is exceptional or unique for traditional fishing, hunting, trapping and plant harvesting activities.

Minor Change in wildlife and plant resources

The Agency believes that the Project is not expected to have an effect on Indigenous fishing given the low fish potential in Streams 2 and 3. As a result, the Project would not have a significant adverse effect on fish and fish habitat (Section 6.1).

The Project site and the limited study area are not conducive to the presence of waterfowl. The Project would therefore have no effect on this resource, its location or its abundance (Section 6.2).

With respect to effects on Indigenous hunting, the Agency agrees with the Proponent that the Project's encroachment on less than 100 hectares of habitat and the mine's operating activities would affect the use of the limited study area by species of interest, including moose and caribou. For moose, the Project would not change its abundance or its distribution across the limited study area or throughout the traditional territory of the First Nations of Lac Simon and Kitcisakik. It is a widely distributed species and suitable habitats for this species are available on the periphery of the Project.

The Proponent did not identify caribou as a species of interest for the hunting activities of the Algonquin Nation. The Agency takes into consideration that the caribou is a subsistence species of cultural and spiritual significance related to current use for traditional purposes for the First Nation of Lac Simon and that it would resume hunting if the Val-d'Or herd recovered. The Project may disrupt or destroy a part of the habitat critical to the recovery of Val-d'Or woodland caribou as defined in the Recovery Strategy for the Woodland Caribou[22]. As mentioned in Section 6.4, the Project's direct contribution to the disturbance or destruction of critical habitat is 0.06% of area QC1 (see Figure 12) and the Proponent proposes a compensation plan to recreate 876 hectares of habitat for caribou for the 219 hectares that would be destroyed by the Project [23].

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[21] The Agency established this fact taking into account the effects of the project alone. The cumulative effects of the project combined with other projects are discussed in Section 7.3

[22] http://publications.gc.ca/site/eng/9.603957/publication.html

The Agency has little information on the presence on the mine site of plant species of interest to the Algonquins, such as blueberries, Labrador tea, birch and wild rice. However, these species are not specific to the Project site (WSP 2017).

Key mitigation measures to avoid significant effects

In addition to the measures provided by the Proponent, the Agency considers that the following mitigation measures are necessary to ensure that there are no significant adverse environmental effects on use of lands and resources for traditional purposes:

- Implement key mitigation measures for the protection of fish habitat presented in Section 6.1
- implement the mitigation measures to protect the Val-d'Or caribou herd presented in Section 6.4, including:
  - revegetate the mine site (with the exception of waste rock dumps and the pit) and the mine site connection road to Eacom Road, during the restoration of the mine site, by planting softwood species to favour the return of suitable habitat conditions for woodland caribou. The Proponent would control the development of broadleaved species that would attract moose and consequently the wolf, caribou predator. The restoration plan would be developed in consultation with the First Nations and the appropriate authorities.
  - implement a caribou training and awareness program for employees and contractors that would include the following themes: description of the species and its habitat, specific mitigation measures, and the management plan for sightings. When hired, all new employees and contractors would be required to attend training sessions;
  - implement a communication system internally (the mine's employees and sub-contractors) and externally (involving Quebec's Department of Forestry, Wildlife and Parks and Eacom, the forest company) to report to drivers of ore transport trucks any sighting or evidence of caribou presence on Eacom Road. Should caribou be present on the mining site or on the the Eacom road, the Proponent would modify the ore transportation frequency, schedule and methods as specified in section 6.4.
  - implement measures to mitigate the frequency and magnitude of noise emitted by Project activities and in particular; provide mobile equipment with a broadband audible alarm to signal reverse and maintain machine mufflers and catalysts, set up an awareness program for machinery operators to avoid the clatter of buckets and falling objects, use light fixtures that provide subdued lighting, direct the luminous flux toward the surface to be illuminated, limit as much as possible the period and duration of the use of the light, install fixed lights so as to avoid light spilling out of the spaces to be illuminated, maintain plant buffer zones to limit projected light to the surrounding areas.
  - immediately notify the regional branch of Quebec's Department of Forestry, Wildlife and Parks in the event of collision with a caribou. New mitigation measures would be identified and implemented, in

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[23] The Agency believes a residual effect persists despite the compensation plan and mitigation measures, and that this effect could be detrimental to the survival and recovery of the Val-d'Or caribou population due to the precarious state of the herd. This effect will be considered in the Cumulative Effects Analysis for Common Use for Traditional Purposes presented in Section 7.3.

collaboration with the Quebec Department of Forests, Wildlife and Parks, to prevent further collision mortalities from occurring.

  - compensate for losses and disturbance of caribou habitat in areas of high restoration potential, creating connectivity and consolidating existing areas with quality habitat for the Val-d'Or caribou herd. The compensation plan would be finalized as well as the monitoring program that accompanies it with the cooperation of the First Nations of Lac Simon and Kitcisakik, the Quebec Department of Forests, Wildlife and Parks and Environment and Climate Change Canada.

- implement the key mitigation measures for sanitary conditions presented in Section 6.6.

Need for and requirements of follow-up

In order to verify the predicted effects on current land and resources uses for traditional purposes and to address concerns from First Nations, the Proponent will implement a follow-up program in collaboration with Environment and Climate Change Canada and with Lac-Simon and Kitcisakik First Nations including:

- Monitoring program to document visual evidence of boreal caribou presence and compliance with mitigation measures
- Monitor the contamination of country food likely to be consumed by First Nations or certain hunted animals (e.g., moose, and bears): blueberries, Labrador tea and white birch, located in areas adjacent to the Project area and on the axis of the prevailing winds. The Proponent would monitor during the operation and after the closure of the mine site (see Section 6.6). The monitoring results would be presented and discussed with the First Nations of Lac Simon and Kitcisakik. Should an increase in metals be observed in blueberries, Labrador tea or white birch, the Proponent would conduct a human health risk assessment.
- Monitoring the effectiveness of the mine site's revegetation activities following the restoration work. The monitoring results would be presented and discussed with the First Nations of Lac Simon and Kitcisakik;
- Monitor over a period of 15 years from the restoration of the mine site to assess the suitability of implementing additional measures, including the control of deciduous tree species to ensure that the restored habitats revert as soon as possible to habitats useful for caribou.

6.6 Aboriginal Peoples – Health Conditions

Some of the environmental changes that could potentially have adverse effects on the First Nations' health conditions include air quality degradation, higher noise levels, contamination of traditional hunting, fishing and harvesting (berries and plants)country food, and water contamination.

According to the Agency, a significant residual adverse effect implies a high risk of exposure to contaminants when concentration are superior to air, food and water health protection standards and criteria, and when First Nations are exposed to them on a regular or continuous basis. The environmental effects rating criteria and the significance of effects determination grid used by the Agency can be found in Appendices B and C respectively.

The Project could affect the health conditions of Lac Simon and Kitcisakik First Nations. Air quality degradation, higher noise levels, and the contamination of traditional hunting, fishing and harvesting (berries and plants) country food and water could occur in the Sabourin River watershed and in a 1-kilometre radius around the Project site.

As a result of its analysis, the Agency concludes that the Project is not likely to cause significant adverse environmental effects on the Indigenous Peoples' health conditions.

- The Lac Simon and Kitcisakik First Nations' exposure to the contaminants produced by the Project would be limited. The Lac Simon First Nation is located 15 kilometres from the Project site, while the Kitcisakik First Nation is 50 kilometres away. Both reserves are outside of the Project's footprint. In addition, the Algonquin First Nations are unlikely to be exposed to contaminants as their use of the territory for traditional purposes is infrequent;
- It is unlikely that dust, metal, metalloid and other contaminant concentrations in the air, animal flesh, plants, fruit or water would increase to a level exceeding health protection standards and criteria.

The following sub-sections contain the baseline condition, the key elements from the Proponent's analysis, and the views of expert government departments, Indigenous peoples and the public, on which the Agency based its conclusion on the significance of the Project's effects on Indigenous health conditions.

6.6.1 *Baseline Condition*

Air Quality

The Proponent qualified the baseline air quality as good, since the Project site is in a non-urbanized area with little industrial activity. According to Environment and Climate Change Canada's National Pollutant Release Inventory, the closest plants to the Project are 12 kilometres away (WSP, 2015). Theoretical values representative of the region (not influenced by other local or regional sources) provided by the Quebec Department of Sustainable Development, Environment and the Fight against Climate Change were used to establish the air quality baseline.

Ambient Noise

The ambient noise baseline was established through noise measurements carried out by the Proponent in the Bayeul Lake sector (holiday area less than 3 kilometres away from the Project site). The results indicate a very low noise level of around 30 decibels A (dBA) during the day and 20 decibels A at night (dBA). Background noise is produced mainly by wind and wildlife (WSP, 2015).

Country Food and Water Quality

The Proponent carried out a baseline characterization of metal concentrations in three plants: blueberries, Labrador tea and birch bark. On the whole, metal concentrations found in Labrador tea and paper birch leaf tissues and blueberries were relatively low and reflected a growth environment that has barely been influenced by local or regional industrial activities (WSP, 2017).

As mentioned in Section 6.1, the results of the surface water physico-chemical characterization (watercourses 2, 3 and 4) showed that the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change and the Canadian Council of Ministers of the Environment criteria for water quality and aquatic life protection (chronic or acute) were exceeded in all three watercourses. On the mine site, groundwater exceeds some of the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change's drinking water criteria for arsenic, copper, iron, manganese, mercury, lead and sulphides (Richelieu Hydrogeology, 2015).

6.6.2 *Proponent's assessment of environmental effects*

Anticipated Effects

According to the Proponent, the significance of the Project's effect on Indigenous health is medium. The magnitude of the effect is considered low because there is no anticipated effect on air quality, ambient noise and country food, other than for users who pursue activities near the mine, where contamination would be more pronounced. The extent of the effect is local because it could affect those who use the territory occasionally. The duration of the effect is long-term because it would last for the duration of the operations. The Proponent proposed a number of mitigation measures to protect the of Indigenous People's health. They are presented in Appendix H.

The Proponent's conclusions were based on the following arguments:

Air quality

Air pollutants would be generated during the construction and operation phases of the mine site. Emissions would be generated by activities such as site clearing, blasting, extracting materials from the pit, crushing, transporting on unpaved roads, storing ore and waste rock, and by exhaust gases being released from vehicles and machinery. The Proponent estimated the increase in atmospheric emissions by modelling the atmospheric dispersion of contaminants while taking into consideration extraction and daily transportation during year 3, when atmospheric emissions would reach their highest level.

The Proponent modelled the emission of the following substances:

- total particulate matter (TPM) and fine particulate matter (PM2.5), nitrogen dioxide (NO2), sulphur dioxide (SO2) and carbon monoxide (CO); and
- Nineteen metals and metalloids, including crystalline silica (SiO2).

Provincial standards and criteria for total particulate matter and fine particulate matter levels would be exceeded. They would exceed standards by approximately 300% for TPM and 110% for PM2.5 for the length of the provincial air quality standards and criteria application, or at 300 metres from the mine site. For the worst year of the model, particulate matter concentrations exceeded the standard for a total of 55 days. Dust is generated by trucks (70%) and bulldozers (24%). The exceedances are located on the mine site's periphery and up to 1 kilometre from the standards and criteria application limit (300 metres). Fine particle concentration exceedances occurred for 5 of the 1,826 modelled days. The exceedances are located on the mine site's periphery and up to 150 metres from the standard and criteria application limit (300 metres).

Due to the frequency of exceedances, the Proponent modelled an optimized scenario involving limited extraction activities and the occasional interruption of bulldozer activities on days when dust particle concentrations (TPM and PM2.5) are likely to exceed the standards. The optimized model produced no anticipated exceedances of the provincial air quality standards and criteria (WSP, 2015).

The other substances that were modelled (nitrogen dioxide, sulphur dioxide, carbon monoxide, metals, metalloids and crystalline silica) met the current provincial air quality standards and criteria.

As for ore transportation to the Goldex plant, modelling based on an unpaved stretch of road showed that TPM concentrations would exceed provincial standards and criteria by about 199%. The model did not take into account the mitigating effect of roadside vegetation. The percentage of dust captured by vegetation can range from 10% in grassy areas to 80% in forested areas. TPM concentrations would fall within the current provincial standards when the road passes through forested areas. As for PM2.5, the model showed that concentrations would remain within standards, even without the mitigating effect of vegetation.

The Proponent indicated that air emissions that could affect Indigenous People's health would be limited given the application of the Project's standard mitigation measures, such as using dust suppressants, watering dry surfaces and establishing an oversight committee. Health effects would also be mitigated by the distance between the Project and the First Nations—15 kilometres for the Lac Simon First Nation and 50 kilometres for the Kitcisakik First Nation (WSP, 2015).

In order to limit the dispersion of TPM and PM2.5, the Proponent proposed to implement an air quality management plan that includes the following measures:

- dry roadways would be watered down when needed and, if necessary, dust suppressants would be used;
- ore would be crushed in a partially closed shelter to control dust emissions. In addition, crushers would be equipped with a dust extractor or a dust suppression system;
- drilling machines would be equipped with dust extractors;
- the speed limit would be set at 40 km/hour on the mine site;
- operational activities would be modulated (halting bulldozer activities, decreasing pit activities) when air dispersion conditions are unfavourable (optimized scenario);
- a participatory vigilance process would be established through a citizen committee and an internal community relations services;
- a contaminant monitoring program would be implemented to determine if concentrations of air contaminants, including metals in dust, have increased significantly (or not) during the operation (WSP, 2016b). The monitoring is proposed in response to the concerns raised by the Lac Simon and Kitcisakik First Nations.

Ambient noise

The Proponent carried out an assessment of the Project's effect on ambient noise in accordance with the provincial requirements of Note d'instructions 98-01 sur le bruit (Traitement des plaintes sur le bruit et exigences aux entreprises qui le génèrent), as well as the requirements of Directive 019 regarding vibrations and noise during blasting.

The main sources of noise and vibrations would be from machinery used for the construction, development and operation of the mine, and for handling and storing unconsolidated deposits, waste rock and ore, and ore processing. Other major sources of noise would be trucks and explosives.

During the construction phase, the Proponent anticipated respecting Notes d'instructions 98-01. For the operational phase, a sound propagation simulation carried out for year 3 (which is when noise levels would be highest) showed that noise would reach a maximum level of 39 decibels in the Bayeul Lake resort area, which is lower than the 40-decibel night-time maximum set out in the Note d'instructions (WSP, 2015). By halting bulldozer activities at night, there would be no more than 36 decibels of noise in that area.

The Proponent stated that the territory could lose some of its tranquility, which could affect its users, particularly members of the Lac Simon and Kitcisakik First Nations who pursue activities near the mine site and could find the quality of their forest experience altered.

To limit ambient noise degradation, the Proponent proposed to implement the following mitigation measures:

- ensure that equipment is properly maintained and that mufflers and catalytic converters are in good condition;
- implement an awareness program for machine operators to prevent slamming buckets and objects being dropped from great heights, and to optimize work methods;
- schedule bulldozers to work on ore dumps during the day only.

The Proponent committed to regularly monitoring ambient noise during the Project's construction and operational phases.

Water Quality and Country Food

On occasion, members of the Lac Simon and Kitcisakik First Nations could hunt and gather in the Project area. Section 6.5 presents the plant gathering activities that take place in the area. The main country food contaminants would stem from water management and the management of ore, waste rock, unconsolidated deposits and metal leaching. According to the Proponent, nine potentially concerning contaminants and metals could be released in the environment by the Project and effect country food: lead, arsenic, nickel, mercury, cadmium, chromium, copper, zinc and selenium.

The Proponent analyzed three potential contamination pathways for country food sources: the air, aquatic environments and food ingestion (WSP, 2016b).

Air transfer modelling for metals showed that provincial air quality standards and criteria [24] were respected for all substances to the 300-metre limit from mining infrastructure. Considering that the standards and criteria were established to protect human health and minimize project effects on country food, the Proponent considers that the anticipated metal concentrations in the air during operation would not affect the health of Indigenous People.

For contamination risks in aquatic environments, the Proponent did not foresee any problems related to metal leaching from waste rocks stored on the site, particularly since all mine water would be collected, monitored and, if necessary, treated to ensure that the final mine effluent respects all discharge requirements.

Regarding country food contaminant ingestion, the Proponent considered that contamination through plants or game is unlikely. The Proponent considered it unlikely that the Project would have a significant effect on metal concentrations in the food chain given the short lifespan of the Project and the adherence to air quality criteria as far as 300 metres from the facilities. The Proponent also considered that increased metal emissions would not necessarily contaminate plants and wildlife because complex processes govern atmospheric fallout metals and their pathways into the environment.

According to the Proponent, the aquatic environment that would receive the mine effluent is unlikely to support long-term subsistence fishing because it consists of small streams at the head of the watershed with very few or no fish. Indeed, it is difficult to use gillnets in these watercourses, which is the method often favoured by Indigenous People to catch a large number of fish. Current subsistence fishing sites would not be affected since they are located around 10 kilometres from the Project site (WSP, 2016b).

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[24] http://www.mddelcc.gouv.qc.ca/air/criteres/Normes-criteres-qc-qualite-atmosphere.pdf

Although the Proponent concluded that standards and criteria would be respected, consultations have revealed that dust emissions could cause Indigenous People to have negative perception and avoid certain areas in the vicinity of the mine or decrease some of their plant or wildlife harvesting. [25]

To respond to the Indigenous People's concerns, the Proponent carried out a characterization of the initial metal concentrations in plants (blueberries, Labrador tea and birch bark) and plans to re-analyze them during the site closure phase.

6.6.3 *Views expressed*

Federal Authorities

Environment and Climate Change Canada and Health Canada were of the view that the air quality modelling results for the Project showed that mining activities are likely to generate large quantities of dust (TPM and PM2.5) if mitigation measures are not taken. Modelled concentrations for particulate matter (TPM and PM2.5) exceed the Canadian Ambient Air Quality Standards of the Canadian Council of Ministers of the Environment. The dust particles would fall back into watercourses, wetlands and wildlife habitats and onto plants around the mine. Consequently, the Proponent committed to implementing a series of mitigation measures aimed at reducing the adverse effects of mining on air quality. Environment and Climate Change Canada and Health Canada deemed that implementing and monitoring mitigation measures would ensure the Project's low residual effect and allow for corrective measures to be taken if real concentration levels were to exceed the Canadian Ambient Air Quality Standards of the Canadian Council of Ministers of the Environment.

Health Canada believed that changes to ambient noise should not cause any adverse effects on Indigenous People's health if noise levels measured during mine operation proved to be similar to those modelled, and if the Proponent applied all the noise mitigation measures. Health Canada was also of the view that it is important to monitor noise to validate the effect study conclusions and the effectiveness of the mitigation measures and that additional mitigation measures would be taken if needed to ensure that the health of the territory's users is protected.

Health Canada considered that the assessment concerning country food ingestion could have been more exhaustive due to its lack of toxicological information. The Proponent provided only the results of initial concentrations for country food. The Proponent indicated that some plants could be monitored if metal concentrations in the air become higher than expected. Health Canada was rather of the view that it would be important to monitor metal concentrations in country food throughout the operational phase. It would be beneficial to work with the Lac Simon and Kitcisakik First Nations to determine which country food should be monitored, as well as the other details of the program (duration, frequency, communication and interpretation of results, etc.).

Indigenous Groups

The Lac Simon and Kitcisakik First Nations expressed some concerns about ground, water, wildlife and air contamination, particularly because of dust propagation. They indicate that they used to harvest wildlife from the territory, but that they now avoid it because they are concerned about country food being contaminated by previous mining activities. Even though the territory is not used as much anymore, the First Nations asked that the risk assessment for country food contamination be carried out, because there is nothing to indicate that the territory would not be used in the future.

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[25] This is already the case–Indigenous peoples avoid hunting, fishing and gathering in the limited study area due to previous mining activities in the territory.

The First Nations asked to see the findings of the characterization of the baseline metal concentration in the ground, groundwater and certain plants that they are likely to consume. In answer to this request, the Proponent provided the First Nations with the metal baseline report for three plants: blueberries, Labrador tea and birch bark.

Public
There were no comments from the public.

6.6.4 *Agency analysis and conclusion*

Analysis of the effects
Based on the advices of Health Canada and Environment and Climate Change Canada, the Agency concludes that the Project is not expected to cause significant adverse effects on the Algonquin Nations' health conditions, as long as contaminant levels measured in the air during mine operation do not exceed provincial air quality standards and criteria and the Canadian Ambient Air Quality Standards of the Canadian Council of Ministers of the Environment. The effect would be low in magnitude considering the territory is used only infrequently. Implementing mitigation measures would ensure that provincial and federal air, water and noise standards and criteria are respected. The extent of the effect would be local, as there would be effects 1 kilometre from the Project site boundary. The duration of the effect would be long-term, as changes would last beyond the closure of the mine. The effect would be partially reversible since emissions would cease once the mine closes and potential contamination of the environment would dissipate over the years.

Based on the advice of Health Canada, the Agency concludes that the Project is not expected to cause significant adverse effects on the Algonquin Nations' health conditions, as long as the Proponent implements all the mitigation measures designed to limit the noise produced by the Project, such as those presented in the impact statement (provincial requirements as per Note d'instructions 98-01 and Directive 019). However, the Agency acknowledges that the noise could impair the tranquility for members of the Lac Simon and Kitcisakik First Nations who hunt and gather plants near the proposed mine.

The Agency notes that the Project has a low risk of contaminating country food since contaminant emissions in the air and water would respect provincial and federal air and water standards and criteria. In addition, Indigenous People rarely harvest country food from the limited study area. There are few fish of interest and the First Nations are wary of potentially contaminated game in the area because of past mining activities.

Key Mitigation Measures to Avoid Significant Effects
In addition to the measures planned by the Proponent, the Agency considers that the following mitigation measures would prevent significant adverse effects on Indigenous People's health conditions:

- develop with the Lac Simon and Kitcisakik First Nations a communication plan to inform, from the start of construction to the end of closure, about:
  - the mine's operational program, particularly for the use of explosives;
  - findings from monitoring programs and the corrective measures to be taken when relevant;

- Develop a protocol to receive noise complaints coming from the Project in collaboration with Lac Simon and Kitciasakik First Nations. The Proponent would implement alternative measures to reduce noise exposition;
- respect the standards and criteria set out in the Canadian Ambient Air Quality Standards of the Canadian Council of Ministers of the Environment and the Clean Air Regulation of the Government of Quebec during all the Project's phases by implementing a dust management program that includes the following mitigation measures:
  - using dust suppressants;
  - performing crushing activities in a sheltered area;
  - setting the speed limit at 40 km/hour on the mine site;
  - modulating operations (halting bulldozer activities, decreasing pit activities) when air dispersion conditions are unfavourable (optimized scenario).

Need for and Requirements of Follow-up

To ensure that significant adverse effects on the Lac Simon and Kitcisakik First Nations' health conditions are avoided, the Agency deems that the following monitoring programs are necessary to verify the effectiveness of the mitigation measures and to adjust them if needed:

- Monitoring air quality: total particulate matter and metals;
- Monitoring water quality and sediments (Section 6.1.4);
- Monitoring contaminants in plants (section 6.5.4).

6.7 Aboriginal Peoples – Physical or Cultural Heritage, and Effect on Historical, Archeological, Paleontological or Architectural Sites or Structures

For the purposes of the environmental assessment, effects on a physical or cultural heritage, structure, site or thing that is of historical, archaeological, paleontological or architectural significance to Indigenous peoples would result from a change in the environment (change to water, wildlife, habitat, soils). The analysis focuses on the following elements:

- material objects, structures and human activities (e.g. mounds, trees with cultural significance, traditional crafts, fossilized remains and historical buildings);
- sites or locations (e.g. burial sites, sacred sites and cultural landscapes);
- attributes (e.g., language, beliefs).

According to the Agency, a residual significant adverse effect is an effect that would damage large areas of a site of significance, alter the integrity of archaeological sites or impede access to sites of significance. The environmental effects rating criteria and the significance of effects determination grid used by the Agency can be found in Appendices C and D respectively.

In its analysis, the Agency concludes that the Project is unlikely to cause significant adverse effects on a physical or cultural heritage, structure, site or thing that is of historical, archaeological, paleontological or architectural significance to Indigenous peoples:

- archaeological studies showed that the study area had very low archaeological potential;
- no natural or cultural heritage elements, or historic, paleontological archaeological sites were identified.

The following sub-sections contain the baseline condition, the key elements of the Proponent's analysis, and the views of expert government departments, Indigenous Peoples and the public, on which the Agency based its conclusion on the significance of the Project's effects on a physical or cultural heritage, structure, site or thing that is of historical, archaeological, paleontological or architectural significance to Indigenous peoples.

6.7.1 *Baseline Condition*

The Proponent carried out a map review of the study area and a visual examination on the ground. Major watercourses and significant bodies of water are absent in the area, making it unsuitable for human occupation (ARCHEO-08, 2014). The Proponent also consulted with the Quebec Department of Culture and Communications and, according to their database, there are no known or classified archaeological sites in the Project area (WSP, 2015).

The high concentration of wetlands in the area makes it unsuitable for human occupation, which is why the Proponent is of the view that it would be very unlikely for there to be archaeological sites anywhere in the limited study area (WSP, 2015). Only the banks of watercourses 2, 3 and 4 have limited archaeological potential (ARCHEO-08, 2014).

Neither the Proponent nor the Lac Simon and Kitcisakik First Nations identified any natural or cultural elements, or historical, paleontological or architectural sites.

6.7.2 *Proponent's Assessment of Environmental Effects*

Anticipated Effects

According to the Proponent, many activities during the construction phase, including backfilling and excavating, could damage currently unknown archaeological sites. The Proponent deemed that the effect is of low magnitude, limited extent and long-term duration. Accordingly, the significance of the effect on archaeological artifacts is considered to be minor.

Although unlikely, if an archaeological artifact is discovered, the Proponent planned to take measures (Appendix H) to protect the site until a more comprehensive assessment is carried out.[26]

6.7.3 *Views expressed*

Federal Authorities

There were no comments from the federal authorities.

Indigenous Groups

There were no comments from the Lac Simon and Kitcisakik First Nations.

Public

There were no comments from the public.

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[26] Note: The discovery of any archaeological artifacts must be immediately declared to the Minister of Culture, as per the *Quebec Cultural Heritage Act*.

6.7.4 *Agency Analysis and Conclusion*

Analysis of the effects

The Agency considers that residual adverse effects on a physical or cultural heritage, structure, site or thing that is of historical, archaeological, paleontological or architectural significance to Indigenous peoples would be non-significant. The magnitude of the effect is deemed low considering that the Project is not located near any archaeological site and that the study area shows little potential. The extent would be limited, as it would be restricted to the Project area. The duration would be long-term since the effects would be permanent.

Key Mitigation Measures to Avoid Significant Effects

The Proponent would have to watch for archaeological remains during construction work. If the Proponent finds a site or object of archaeological significance on the mine site, it would:

- immediately halt work at the location of the discovery;
- delineate an area of at least 30 metres around the discovery as a no-work zone. The no-work requirement does not apply to actions required to be undertaken to protect the integrity of the discovery.
- inform the Lac Simon and Kitcisakik First Nations within 24 hours of the discovery, and allow them to monitor archaeological excavations;
- have a qualified individual conduct an assessment at the location of the discovery;
- comply, following consultation with Lac Simon and Kitcisakik First Nations and relevant authorities, with all applicable legislative or legal requirements and associated regulations and protocols respecting the discovery, recording, transferring and safekeeping of structures, sites or things of historical, archaeological, paleontological or architectural significance.

7 Other Effects Considered

7.1 Effects of Accidents and Malfunctions

In the context of the environmental assessment, an "accident" is defined as an unexpected and sudden event involving Project components or activities resulting in damage to the valued components listed in Table 1 of section 1.3.4 (CEAA, 2017). A "malfunction" denotes an inability on the part of equipment or a system to function as planned, leading to damage to these valued components.

Because the mine site has no ore processing plant and there are no water retaining dike or tailings, the main risks of accident or malfunction stem from spills or leakage of hydrocarbons or chemical products at the site, release of contaminated water, collapse of a slope or rock pile, and spills of ore, oil or chemical products on the road. The valued components likely to be affected by accidents or malfunctions are fish and their habitat and the Val d'Or caribou herd.

After the completion of its analysis, the Agency concludes that it's unlikely that accidents or malfunctions would occur in a way that would cause significant residual adverse environmental effects on fish and their habitat:

- the Proponent identified clearly the risks inherent in its Project and plans to implement preventive measures, including adequate design, inspection and maintenance of infrastructure;
- the Proponent plans to develop a detailed emergency plan providing for rapid and effective response in case of accident or malfunction.

The effects of accidents and malfunctions on the Val d'Or caribou herd are dealt with in section 6.4.

The following subsections describe the essential factors in the Proponent's analysis and provide the views of departmental experts and of Indigenous people and the public, on which the Agency based its findings on the scale of the effects of accidents and malfunctions.

7.1.1 *Identification of accident and malfunction risks*

Accidents or malfunctions may occur at any time during construction of the mine site, continuing after closure. The Proponent analysed the technological risks of the Project to see where accidents or malfunctions may occur and to weigh the consequences. The steps in the analysis were inspired by the Risk Management Guide for Major Industrial Accidents, developed by the Major Industrial Accidents Reduction Council, and the Guide d'analyse des risques d'accidents technologiques majeurs of the Department of Sustainable Development, Environment and the Fight Against Climate Change (WSP, 2015a).

Spills or leakage of oil and chemical products at the mine site

Several hazardous materials would be used at the Project site, among them hydrocarbons, water treatment products, oils, hydraulic fluid, paints, solvents and ethylene glycol. Accidental spills may occur during transportation, storage or use of the products or as a result of a collision causing rupture of a fuel tank, breakdown of machinery, corrosion of equipment, and overflow from tanks or other receptacles during filling.

Release of contaminated water

Contaminated water may be released as a result of overflow of the mine water retention and polishing ponds or poor functioning of the mine water treatment system because of a pond design flaw or human error.

Collapse of a slope or rock pile

Slopes or rock piles may collapse because of poor design, earth tremors, extreme weather, forest fires or human error.

Road spills of ore or of oil or chemical products

Ore would be trucked on the Eacom road to the Goldex plant for processing. Ore may be spilled when trucks collide and overturn or when drivers lose control.

7.1.2 Proponent's assessment of environmental effects

For each accident risk, the Proponent defined the potential effects and prevention and control measures (Appendix H) for reducing or eliminating the risks. Fish and their habitat are a valued component of the environment that could be affected by accidents.

Effects of spills or leakage of oil or chemical products at the mine site

An accidental spill of oil or chemical products could contaminate groundwater and surface water. The effect of a spill or leakage depends on the volume of contaminants released and whether the event is isolated or recurrent.

Contaminated groundwater may re-emerge and mix with surface water, possibly contaminating fish habitat. Perforation of a fuel tank is the kind of accident most likely to lead to contamination of groundwater. The Proponent estimated the likelihood of contamination to be low, since all tanks would meet standards and be double-walled and fitted with a holding pan. Also, the surface deposits at the mine site, consisting of glacio-lacustrine silt, are not very porous and would limit the migration of contaminants into the water table.

The main risk likely to cause contamination of surface water is a spill of oil products near infrastructure for channeling and retaining run-off water at the mine site. Such a spill could reach watercourse 3, which constitutes fish habitat. Here again, the Proponent estimated the risk to be low, given the prevention and control measures implemented:

- limited quantities of diesel fuel stored at the site (2 diesel tanks of 25,000 litres each);
- use of double-walled fuel tanks;
- confinement of the tanks and the presence of collector trenches girdling the mine site;
- the presence of firefighting equipment and spill response kits;
- storage of hazardous products in sealed containers;
- periodic inspection and maintenance of systems and equipment;
- staff training on the emergency measures plan;
- prompt application of emergency measures in case of a spill.

Effects of release of contaminated water

Release of contaminated water could contaminate watercourse 3, close to the Project site, in contravention of the *Metal Mining Effluent Regulations*. Such a release could be associated with overflow from the mine water retention and polishing ponds after heavy rain or with inadequate treatment of the water.

If mine water from a pond overflows, the Proponent estimated that the effects on fish habitat would be minor, since the water would escape into the environment close to the natural soil level and would thus be filtered by the vegetation growing there. Further, since the quality of the water in the retention pond would meet some of the effluent requirements of Directive 019 and the water in the polishing pond would meet the demands of Directive 019, the effects on the receiving environment would be minor.

The Proponent also indicated that the ponds would be excavated rather than diked. Release of untreated water into the environment would therefore stem from overflow rather than dike rupture. Given the location of the ponds, there would thus be no rapid increase in flow (surge) likely to entail a sudden and significant increase in suspended matter in watercourse 3.

The Proponent identified several measures for avoiding release of contaminated water, among them:

- the mine water retention pond would be dug entirely in the surface deposits by excavating the required volume, rendering the scenario of dike rupture inapplicable, and the dike around the pond would be designed on the basis of recurrence once in 100 years (cresting or exceptional torrential rainfall);
- in the event of extreme weather occurrences, pumping of water from the pit and the peripheral wells may be reduced or halted to ease pressure on the retention pond;
- the retention pond would have a large emergency overflow catchment into which water could spill rapidly in extreme conditions;
- in case of extreme weather, the flow of water into the polishing pond would be controlled by the water treatment system;
- in plans and specifications, tailings and rock piles would be designed according to all applicable regulations, standards, codes and best practices;
- the various water collection and management structures would be regularly inspected;
- the quality of the final effluent would be monitored in accordance with Directive 019 (continuous reading of pH).

Effects of collapse of tailings or rock piles

Collapse of tailings or rock piles could release contaminants, for example suspended matter or debris, into watercourses 2 or 3, thus degrading fish habitat.

The Proponent planned several measures to avoid collapse of tailings or rock piles:

- in plans and specifications, tailings and rock piles would be designed according to all applicable regulations, standards, codes and best practices;
- tailings and rock piles would be regularly inspected.

Effects of spills of ore or of oil or chemical products on the road

Should a truck carrying ore collide on the Eacom road, ore from the load could be spilled onto and beyond the road. Unlike liquid spills, solid content such as ore is more easily and quickly recovered. An ore spill along the road would be recoverable within a week. However, if the fuel tank of an ore truck is pierced, there may be a local environmental effect (groundwater and wetlands) through dispersal of the fuel into fish habitat. In such an event, the volume at issue would be limited by the capacity of the fuel tank. Consequently, a road accident associated with ore transportation would have minor effect. There is a possible risk of traffic accidents on the Eacom road when ore is being carried. However, the Proponent claimed that the risk is reduced because the road is little used by other traffic, not being connected to a secondary highway network or used for other industrial purposes.

The Proponent did not assess the effects of a spill from fuel deliveries to the mine site. The Proponent stated that the carrier responsible for supplying fuel to the mine site would have to activate his own emergency plan and would deploy means for confining and recovering hydrocarbons promptly.

The Proponent identified several measures for avoiding or responding to road accidents including limiting the speed of truck to 70 kilometres per hour.

7.1.3 *Views expressed*

Federal authorities

Overall, Environment and Climate Change Canada considered the measures submitted by the Proponent for minimizing the risk of accidents or malfunctions to be appropriate (Environment and Climate Change Canada, 2017). However, the department suggested certain measures to limit the consequences of spills or leakage of oil products. For example, the department recommended the Proponent not to undertake diesel supply operations or equipment maintenance in places where an accidental spill could affect waters frequented by fish. Also, these operations would be performed on a non-porous surface equipped with a collection system so that oil, gasoline of hydraulic fluids cannot reach surface water or groundwater. Suitable spill response gear and clean-up materials (absorbents, confinement equipment, etc) would be on hand for all transfers of fuel or hazardous substances and in all areas where vehicles are serviced. Environment and Climate Change Canada further recommended using biodegradable products wherever possible when servicing machinery.

Environment and Climate Change Canada was of the view that, in general, the information which the Proponent considered to include in the emergency measures plan is appropriate. The department recommended including in the Proponent's emergency measures plan mapping of the environmentally sensitive elements at the mine site and along the access road to provide the fastest possible guidance in response to an accident or malfunction. In addition, maps should be updated periodically or as needed to take account of any changes in the environment.

The department recommended incorporating into the Proponent's emergency measures plan the safety and emergency procedures of the company responsible for supplying diesel oil so as to limit contamination risks. With regard to use of the Eacom road, the plan should include the measures to be taken in case of road accidents, clearly specifying the roles and responsibilities of the Proponent and of Eacom in responding.

First Nations

The Lac Simon and Kitcisakik First Nations did not provide any comments.

Public

The public did not provide any comments.

7.1.4 *Agency's analysis and conclusion*

The Agency considers that it is unlikely that accidents and malfunctions would occur in a way that could causes significant residual adverse environmental effects for fish and fish habitat to be low.

Identification of risks and effects

The Agency is of the view that the Proponent adequately identified and assessed potential accidents and malfunctions associated with the Project. The Agency notes that the Proponent took into account accident and malfunction risks by designing the Project to forestall risks. The Proponent also took into account the concerns of federal authorities with respect to the risks associated with the Project and committed to implement emergency and response plans to deal with any accidents.

Key mitigation measures for avoiding significant effects

The Agency takes into account the mitigation measures proposed by the Proponent and of the views of expert federal authorities for identifying key mitigation measures so that the Project would not cause significant adverse environmental effects in case of accident or malfunction (the measures pertaining to the Val D'Or caribou herd are presented in sections 6.4 and 6.5). The Proponent would:

- take all reasonable actions to prevent accidents or malfunctions to cause adverse environmental effects and implement prevention and response measures developed for the Project. These measures would take account of the commitments stated in the EIS, the recommendations set out by Environment and Climate Change Canada and the Environmental Code of Practice for Metal Mines;[27]
- develop a detailed emergency measures plan to include:
    - steps to be taken to respond to emergencies for each of the main potential accident risks, in particular measures for protecting the environment;
    - identification and location of the equipment needed to respond to such emergencies to be sure of their readiness;
    - detailed alert procedures in case of spills, and an emergency communications plan for contacting outside parties;
    - a contingency plan in case of spills of hazardous products;
    - a description of what is planned in case of a spill of hazardous products to protect sensitive components of the environment, notably surface water, groundwater and wetlands, fish, migratory birds or other sensitive species;
    - a description of a training program for employees and first responders;
    - a periodic review plan.
- consult the Lac Simon and Kitcisakik First Nations on the detailed emergency measures plan before starting construction;
- in case of accidents or malfunctions risking adverse environmental effects:
    - as soon as possible, given the circumstances, advise the competent federal and provincial authorities, including the Agency, in writing;
    - immediately implement measures to mitigate the adverse environmental effects of the accident or malfunction;
- submit a written report to the Agency no later than 30 days after the accident or malfunction. The report should include:

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[27] https://www.ec.gc.ca/lcpe-cepa/documents/codes/mm/mm-eng.pdf

  - a description of the accident or malfunction and its adverse environmental effects;
  - the measures taken by the Proponent to mitigate the adverse environmental effects of the accident or malfunction;
  - a description of the residual effects of any additional measures needed to reduce the residual environmental effects;
  - details of the emergency response plan applied, as required.
- no later than 90 days after the accident or malfunction, submit a written report to the Agency on the changes made to avoid recurrence of the accident or malfunction and additional measures taken to mitigate the residual environmental effects;
- develop and implement a communications plan in consultation with the Lac Simon and Kitcisakik First Nations, to include:
  - the type of accident or malfunction to be reported to the Lac Simon and Kitcisakik First Nations;
  - the approach used by the Proponent to inform the Lac Simon and Kitcisakik First Nations of an accident or malfunction and the possibility of the First Nations participating in the response to accidents or malfunctions;
  - the contact details of the Proponent's representatives with whom the Lac Simon and Kitcisakik First Nations can communicate, and the contact details of representatives of the Council of the Anishnabe Nation of Lac Simon and the Council of the Anicinapek of Kitcisakik who would be contacted by the Proponent.

7.2 Effects of the Environment on the Project

The analysis of the effects of the environment on the Project takes into account environmental factors that could affect the Project and lead to adverse environmental effects, such as forest fires, earthquakes and extreme weather events related to climate change or not.

These factors may damage mining infrastructure and increase the risk of accidents and malfunctions, which could cause a facility shutdown or a spill. The adverse environmental effects that could be caused by accidents and malfunctions can be found in Section 7.1.

7.2.1 *Baseline condition*

The northernmost regions of Quebec, which span large territories of boreal forest like the Abitibi region, contain larger areas affected by forest fires. The remoteness, vast quantities of fuel (coniferous forests) and increased recurrence of lightning often cause widespread fires. Many forest fires occur in Abitibi every year. The Quebec Department of Forests, Wildlife and Parks lists on average 179 forest fires annually, representing an area of approximately 29,296 hectares burned each year.[28]

The Project would be located in the Western Quebec Seismic Zone, which constitutes a vast territory that encloses the Ottawa Valley from Montreal to Temiscaming, as well as the Laurentians and Eastern Ontario.

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[28] **French only:**Https://www.mffp.gouv.qc.ca/publications/enligne/forets/criteres-indicateurs/2/213/regions_superficie.asp

The Western Quebec Zone is located in a stable continental region of the North American plate, thus leading to relatively low seismic activity. The southern portion of the Western Quebec Zone was the site of at least three significant earthquakes in the past (Montreal in 1735, Temiscaming in 1935 and Cornwall in 1944). Weaker earthquakes (magnitude 4 and less) can sometimes occur in the study area. [29]

Because of the geographical characteristics of Abitibi-Témiscamingue, some climate change effects could be exacerbated (increased frequency of extreme weather events and average temperature increase). In the mining sector, an increasing number of extreme events (severe storms, intense rainfall, strong winds) could have heavy effects. For example, the floods in the spring of 2013 (in Rouyn-Noranda and Amos in particular) and those in August 2013 (in Dupuy and La Sarre) caused serious damage. Following torrential rains, rapidly swelling watercourses damaged and destroyed road culverts and dams, flooded neighbourhoods and caused power outages.[30]

7.2.2 *Proponent's assessment of environmental effects*

The Proponent indicated that the environmental factors would likely to have an effect on the Project and to result in environmental effects include forest fires, earthquakes and the effects of climate change, such as more intense precipitation. Some natural disasters, such as landslides, were not taken into consideration in the context of the Project given their low risk in the study area. Indeed, while there is clay in the soil, the relatively flat relief in the area means there is very little likelihood of a landslide occurring.

Finally, the Proponent stated that forest fires would probably be the most likely to affect mining infrastructure. According to the Proponent, however, given the quicker land response possible due to the presence of a road network on the mine site, many ignition sources could be put out before developing into large out-of-control fires.

Extreme rainfall events could have an adverse effect on the mine site's infrastructure and roads (overflow, flooding, loss of materials, erosion, etc.). However, the Project's location at the head of the watershed makes it unlikely that its infrastructure would be affected by flooding. An exceptional flood could nevertheless cause delays in the construction phase.

Mitigation measures proposed by the Proponent

The Proponent indicated that the Project's civil and mining engineering structures have been sized and positioned in such a way as to take into account the potential occurrence of extreme events. For example, the infrastructure regulating water levels and flow was designed to handle a 100-year flood event.

The Proponent's emergency response plan would take or takes into account events resulting from climate change, including forest fires, flooding, high winds and snow storms.

7.2.3 *Views expressed*

Federal authorities

On the whole, Environment and Climate Change Canada considered that the measures presented by the Proponent to minimize the risks of accidents or malfunctions are appropriate (see Section 7.1).

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[29] http://www.earthquakescanada.nrcan.gc.ca/zones/eastcan-en.php#WQSZ

[30] French only: http://www.rncreq.org/projets/adaptation.html

First Nations

There were no comments from the Lac Simon and Kitcisakik First Nations.

Public

The Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT) asked whether climate change has been taken into account for the design of the facilities, particularly with regard to the increase in temperatures (frost depth) and impacts to be expected (eg. broken pipes).

7.2.4 Agency analysis and conclusion

The Agency considers that the Proponent took into account the environmental factors that could affect the Project were accounted for in the design of the mine site structures, that it has documented the potential accidents and malfunctions related to these factors had been documented and that it has planned an appropriate emergency response plan (Section 7.1). The Agency deems that it is unlikely that the environment would cause effects on the Project that would cause significant adverse effects.

7.3 Cumulative Environmental Effects

Cumulative environmental effects are defined as the effects of a Project that are likely to result when a residual effect acts in combination with the effects of other projects or activities that have been or would be carried out. The cumulative effects assessment was guided by the Agency's Operational Policy Statement – Assessing Cumulative Environmental Effects (May 2013).

Under the *Canadian Environmental Assessment Act, 2012*, the "environmental effects" to be considered for the cumulative effects analysis are those in areas of federal jurisdiction as described in section 5 of the *Canadian Environmental Assessment Act, 2012* (see section 1.4). For the Project, the Agency specifically focused its analysis on migratory birds and the current use of lands and resources for traditional purposes by Indigenous peoples.

According to the Agency, a significant adverse cumulative effect on migratory birds and birds at risk would result from habitat losses and deterioration and from incidental bird catches that could lead to the decline of a bird population or that could adversely affect the recovery of one or more at-risk species for which a recovery strategy is in place pursuant to the *Species at Risk Act*.

According to the Agency, a significant adverse cumulative effect on the current use of lands and resources for traditional purposes would be a combined effect of past, existing and future projects and activities that greatly disturb traditional practices or activities by altering access to traditional land and the quantity and quality of available resources.

The environmental effect assessment criteria and significant effect determination grid used by the Agency are presented in Appendices B and C, respectively.

In sections 6.2 and 6.5, the Agency concluded that the effects of the Project on these two components are not significant. In fact, the Agency considers that the effect of the Project, considered separately, is of minor importance in relation to birds and of moderate importance in relation to the current use of lands and resources for traditional purposes by Indigenous people. Although these effects are not significant, the Agency believes that they can be combined with the effects of other past, present and future activities or projects. So even if the contribution of the Project is small, the overall result in terms of cumulative effect can be significant. It would be taken into account that the Project would be located in a territory which, since 1930, is experiencing an expansion of mining and forestry activities, major roads, urban and recreational developments.

The Agency concludes that:

- the Project is not likely to cause significant cumulative effects on migratory birds; and
- the Project, although its contribution is small, is likely to cause significant cumulative effects on the use of lands and resources for traditional purposes by Indigenous peoples.

The Agency's conclusions are based on the Proponent's analysis, the views of expert departments and the views of Indigenous peoples and the public.

7.3.1 *Methodology and Scope*

To analyze the Project's cumulative effects, the Proponent used the methodology outlined in the Practitioners Guide prepared by Hegmann et al. (1999). This methodology involves the following steps:

- Identification of valued components;

- Determination of spatial and temporal boundaries for each valued component;
- Identification, description and selection of past, existing or future projects, actions or events that could interact with one of the valued components;
- Description of the historical trends of each valued component selected;
- Determination of the cumulative effects for each valued component selected; and
- Development of mitigation measures for and follow-up on cumulative effects.

The Proponent assessed the cumulative effects of two valued components: migratory birds and traditional use of the land by members of the Lac Simon and Kitcisakik First Nations. The spatial and temporal boundaries determined for each selected valued component are presented in Table 5.

Table 5 Cumulative effects: Components, spatial and temporal boundaries

Valued Component	Temporal Boundary	Spatial Boundary
Migratory birds	1970–2023	25 km radius around approximate centre of Project site
Traditional use of land by Lac Simon and Kitcisakik Algonquins	1939–2023	Family hunting grounds established in 1928. Ottawa River and Bell River watersheds.

The past, existing or future projects, activities or events having an effect on the valued components selected by the Proponent for the cumulative environmental effects assessment are presented in Appendix I. The Projects have been grouped into five categories: land planning and development, land use, wildlife species and habitat protection and management, natural resource development, and natural and other disturbances.

7.3.2 *Potential Cumulative Effects on Migratory Birds and At-risk Birds*

The Proponent considered the project's cumulative effect on migratory birds to be very low because the magnitude is low, the extent is point-like, the duration is long-term and the probability of occurrence is low. The Proponent based its conclusions on the following arguments:

The Proponent analyzed several past projects, developments and activities that resulted in a permanent loss of terrestrial lands and wetlands and, most likely, fluctuations within bird populations. Specifically, the Proponent analyzed infrastructure projects such as highways 113, 117 and 397, the Rouyn-Noranda–Senneterre rail line, the pipeline along Highway 117 and telecommunications towers. It also analyzed urban development such as the city of Val-d'Or and the Lac Simon Algonquin reserve. It also analyzed the territory's use for recreational purposes, including cottage areas, snowmobile and ATV trail networks and temporary shelters for hunting and trapping. The Proponent also identified around ten former mines on either side of Highway 117 as well as logging operations located mostly to the north of the Project site.

As for existing and future projects, according to the Proponent, only one other project would be located in the cumulative effects study area: the Lamaque South mining project, by Integra Gold Corp., located near the Val-d'Or urban area. The Proponent also identified the creation of a forest park integrated into Val-d'Or, smaller-acreage logging to the north of the Project, and cottage development in the areas immediately surrounding the Project zone.

The Proponent examined population trends among the bird species most likely to be affected by the Project. Despite an accumulation of Project-related habitat losses, these populations have not experienced a significant change in their numbers in the study area.

7.3.3 Views Expressed

Environment and Climate Change Canada was satisfied with the cumulative effects analysis presented by the Proponent for migratory birds. However, given the uncertainties about the reasons for the decline in at-risk bird species, it is clear that any additional habitat losses or alterations are likely to have an effect on them. Thus, the Project activities, as well as the past, existing and future projects, actions and events identified by the Proponent may have cumulative effects on the nesting habitat of species at risk (alteration and loss of habitat) and on the species' nesting activities (disturbance due to the presence of the mine and these activities). Even though habitats in the surrounding areas are abundant, the accumulation of residual effects could reduce the availability of quality habitats for the species and thereby increase intra- and inter-species competition.

A follow-up program involving the implementation of adaptive measures could address, to some extent, the uncertainties associated with the Project's residual and cumulative effects on at-risk bird species.

7.3.4 Agency Analysis and Conclusions

The Agency concludes that the Project is not likely to cause significant adverse cumulative effects on migratory birds, and it deems no additional mitigation measure to be necessary.

The Agency bases its conclusion on the Proponent's analysis to the effect that the potential cumulative effects for migratory birds resulting from habitat loss or alteration would be minor because the bird populations that are affected by successive developments of the territory have not experienced a significant decline in their numbers and the birds displaced by the Project would still have access to high-quality habitats elsewhere in the restricted and expanded study areas.

Key Mitigation Measures

The Agency is not recommending any additional mitigation measures to those listed in section 6.2.

Need for and Requirements of Follow-up

The Agency is not recommending any additional follow-ups to those listed in section 6.2.

7.3.5 Potential Cumulative Effects on the Current Use of Lands and Resources for Traditional Purposes

According to the Proponent, the Project would have a low cumulative effect on traditional use of the territory by Algonquin peoples because it is located in an already greatly disturbed area of their ancestral land, particularly in the Val-d'Or–Senneterre corridor. The cumulative effect of the Project is deemed to be of minor significance, point-like in extent, long-term in duration and with a high probability of occurrence.

The Proponent selected the decade between 1930 and 1940 as the past temporal boundary against which to assess the Project's cumulative effects on traditional use of the territory by the Lac Simon and Kitcisakik First Nations. The greatest territorial changes for the Algonquin peoples since their first contact with Europeans occurred in this decade, in connection with rapid colonization (creation of the towns of Val-d'Or and Bourlamaque) and the expansion of mining and logging activities on the territory.

Numerous actions, projects and events have had an effect on the use of this territory since that decade. All of these various events combined gradually contributed to an altering of land use practices over the years. Among the actions, events and projects likely to have influenced the territory's use by the Lac Simon and Kitcisakik Algonquin peoples, the Proponent identified the following:

- Major mining boom: in the Val-d'Or area, three mines (Sullivan Consolidated, Lamaque and Sigma) began operations between 1931 and 1935, and nine others before 1950;
- Rapid population growth and colonization of the region with the creation of the municipality of Val-d'Or (1935) and Bourlamaque (1937);
- Construction of the Rouyn-Noranda–Senneterre rail line (1937);
- Highway 117 extension (Mont-Laurier–Senneterre section, 1939) and construction of the Val-d'Or–Senneterre highway (1938);
- Creation of La Vérendrye park (1939), which would become a wildlife reserve in 1979;
- Intensification of logging beginning in the 1940s;
- Creation of the Decelles (1941) and Dozois (1949) reservoirs;
- Introduction of traplines (1948) in the Grand Lac Victoria beaver reserve;
- The Act concerning compulsory education, adopted in 1951;
- Lac Simon Reserve officially established in 1962;
- Development of the Algonquin workforce, seasonal paid employment and the creation of certain government programs between 1950 and 1970; and
- Gradual development of cottage areas and recreational hunting and fishing activities by non-Indigenous people.

The ancestral territory of the Lac Simon and Kitcisakik First Nations is highly sought after, in that over sixty mining exploration projects were underway on this territory in 2013 (Ministère de l'Énergie et des Ressources naturelles, 2015). Between 2008 and 2013 alone, commercial logging activities were conducted on nearly 37,000 hectares. The territory is also heavily frequented by non-Indigenous people for recreational hunting and fishing, and it has numerous seasonal and permanent homes.

7.3.6 *Views Expressed*

Federal Authorities

As indicated in sections 6.4 and 6.5, Environment and Climate Change Canada considered the Project to still have a residual effect on the Val-d'Or caribou herd despite mitigation measures, including the compensation plan. This residual effect, taken in a cumulative effect context, could hinder the survival and recovery of the Val-d'Or caribou population, given the precarious state of this herd.

First Nations

The Lac Simon First Nation expressed concerns about the cumulative effects of the Project. Members of the First Nation are concerned about the potential loss of enjoyment of the territory for future generations, which is already greatly exacerbated by the growing number of mining operations, the history of contamination in the limited study area and logging.

In a January 2018 letter to the Minister of Environment and Climate Change, the Council of the Nation Anishnabe du Lac Simon indicated that the woodland caribou holds an important place in Anishinabek culture, spirituality and traditions. For the Lac Simon First Nation, the imminent disappearance of the Val-d'Or caribou herd would represent a limitation in the collective exercise of rights on the traditional territory. The Lac Simon First Nation was already seeing the adverse effects that the hunting suspension is having on the transmission of traditional knowledge and culture associated with the caribou.

The Lac Simon First Nation considered that, given the current proportion of disturbance (65%) in the critical habitat of QC1 caribou, any additional disturbances would further aggravate the herd's situation. For the Kitcisakik First Nation, accepting the Project on the territory—even if accompanied by a compensation plan to recreate caribou habitat—is a sign of wanton disregard for a species well on its way to extinction. The Kitcisakik Algonquin Nation refused to be complicit in the disappearance of the caribou, a species with which Algonquin peoples have a spiritual connection.

7.3.7 *Agency Analysis and Conclusions*

Although the contribution of the Project is small, the Agency is of the view that the Project is likely to cause significant adverse cumulative effects to the current use of lands and resources by Indigenous peoples. The magnitude of the cumulative effect is significant considering the high value that the current use of lands and resources for traditional purposes has for the Lac Simon and Kitcisakik First Nations and considering that the disturbances that the Project would contribute to would highly disrupt access to the territory as compared to pre-1930. The Project could hinder more the survival and recovery of the Val-d'Or caribou population, which, from a cumulative effect perspective, could lead to a significant alteration in First Nations' preferred wildlife resources. The duration would be long-term because the effects would be felt over several hunting seasons and over several generations of Algonquin peoples. The reversibility is partial: certain aspects of current use (territory access and use) could be partially recovered through mining site restoration and the closing and restoration of logging roads or other mined areas. However, ongoing cumulative effects could lead to the disappearance of the Val-d'Or caribou herd, which would be irreversible.

Significant Change in Land Access and Use at the Regional Level

Based on the Proponent's analysis and the information provided by the Lac Simon and Kitcisakik First Nations, the Agency estimates that the land under study has already been greatly disturbed by roads, urban development, mining development, forestry operations, vacation leases (temporary shelters, cottages) and the use of wildlife resources by land users (non-Indigenous). These past and current disturbances have changed land use by Indigenous peoples in an intensive manner and this is the case on nearly all of the traditional land (regional extent). Although the additional contribution by the Project is reduced, given its footprint and duration, it would still contribute to the degradation of the traditional lands of the Lac Simon and Kitcisakik First Nations. Figure 12, which shows the distribution of the Val-d'Or herd, illustrates all of the projects and activities (excluding forestry operations) that disturb the current use of lands and resources for traditional purposes, for part of the traditional land.

Several members of the Lac Simon and Kitcisakik First Nations no longer use the limited study zone for hunting, trapping and picking due to the fear these country food sources have been contaminated by past mining operations. The Agency is of the view that the foreseeable changes to the environment caused by the Project, added to the effects from other mining projects (e.g., the Manitou mining project), are likely to extend the period during which the members of the Lac Simon and Kitcisakik First Nations would feel that this part of their land is not suitable to hunting, trapping and picking.

Significant Loss of Wildlife and Plant Resources

Although the contribution of the Project is small, the Agency considers that the cumulative effects on the critical habitat of Val-d'Or caribou would have an adverse effect on the recovery of this caribou population, which would push back or eliminate any possibility for the Lac Simon First Nation to resume the traditional caribou hunt on its traditional lands.

The Agency notes that the Val-d'Or herd is an important issue for the Lac Simon First Nation. It is concerned by the past, current and future effects of forestry and mining operations that contribute to the decline of the Val-d'Or herd. The caribou is an important species to the traditional diet of members of the Lac Simon First Nation and is an integral part of their hunting and trapping traditions. Kitcisakik Firt Nation has now integrated moose as a hunted resource.

The Agency considers the concerns raised by the Lac Simon First Nation which has highlighted the need to protect the critical habitat of the Val-d'Or caribou herd. This point of view is supported by the advice of Environment and Climate Change Canada that any activity susceptible of destroying critical habitat may have a potentially significant effect on the survival and recovery of the Val-d'Or herd, given its precarious state (non-self-sustaining population). Environment and Climate Change Canada considered that the disturbance rate on the habitat of the Val-d'Or herd has progressed from 60% in 2012 to 65% in 2017. These disturbances are caused essentially by the cumulative effects of human activity.

The Agency considers, given the advice of Environment and Climate Change Canada, that the mitigation measures including the compensation plan proposed by the Proponent, even if they are in line with the caribou recovery plan, do not completely eliminate the Project's effects on the caribou and its critical habitat. The cumulative effects, which include the Project's residual effects, could compromise the survival of the Val-d'Or herd's recovery given its precarious state. However, "Achieving the recovery goal for boreal caribou would allow for local population levels sufficient to sustain traditional Indigenous harvesting activities consistent with existing Indigenous and treaty rights." (Environment Canada, 2012).

The Agency takes into account the at-risk status of the Val-d'Or herd, the cumulative disturbances on critical habitat and the importance of the caribou to traditional practices, including the aspects pertaining to culture and the transmission of traditional knowledge. The Agency acknowledges that effects on caribou and the Indigenous harvesting of caribou have already occurred in the region as a result of past and present projects and activities. The Agency is of the view that, although the Project when considered separately has a low incidence, the effects resulting from the Project, in combination with the effects of past, current and future projects, could adversely affect the survival of the Val-d'Or herd and delay the renewed hunting of caribou by the Lac Simon First Nation.

Key Mitigation Measures

The Agency is not recommending any additional mitigation measures to those listed in section 6.5.

Need for and Requirements of Follow-up

The Agency is not recommending any additional follow-ups to those listed in section 6.5.

8 Impacts on Potential or Established Aboriginal or Treaty Rights

8.1 Potential or Established Aboriginal or Treaty Rights in the Project's Study Area

8.1.1 *Cree Nation Government*

The Project would be located on land covered by the *James Bay and Northern Quebec Agreement*. Under the *James Bay and Northern Quebec Agreement*, the lands are divided into three categories. Category I lands, located around and within communities, over which the Cree have exclusive use. Category II lands over which the Cree have exclusive rights for hunting, fishing and trapping and the operating of outfitters and commercial fisheries and category III lands, public lands in Quebec where the Cree have certain exclusive hunting, trapping, fishing and commercial fishing rights for certain animal and aquatic species.

The Project site would be located in the "south zone", a section of the *James Bay and Northern Quebec Agreement* lands where the Cree have hunting, fishing and trapping rights under chapter 24 of the *James Bay and Northern Quebec Agreement* solely on category I and II lands as well as in Cree traplines.

There are no Cree traplines or category I or II lands in the Project study zone located on category III public lands on which Indigenous and non-Indigenous people can hunt and fish.

8.1.2 *Algonquin First Nations*

The land claimed by the Algonquin in Quebec extends from Sault Ste. Marie in Ontario to Trois-Rivières in Quebec. The regions of Montreal and Ottawa, the Montérégie region, the Laurentians and Abitibi-Témiscamingue are includedin the claim that also partially overlaps the *James Bay and Northern Quebec Agreement* territory.

Over the years, the Algonquin have made several claims and declarations as part of the Comprehensive Land Claims Policy in regards to their Aboriginal rights, their Aboriginal title as well as use of the land in the Project's vicinity. Some of these claims have been analyzed by the Government of Canada and various positions have been communicated to the Algonquin First Nations of Quebec, but no final position has been expressed.

In a declaration dated August 2013, several Algonquin Nations of Quebec, including the Abitibiwinni and Kitcisakik, stated that they have Indigenous rights, exclusive or not, that could include an Aboriginal title to traditional land overlapping part of the territory targeted by the *James Bay and Northern Quebec Agreement*. They argued that subsection 3(3) of the *James Bay and Northern Quebec Native Claims Settlement Act*, S.C. 1976-77, c. 32, which nullifies the rights of third parties under the treaty, does not apply to them. In the event a Court were to conclude that subsection 3(3) of the aforementioned Act applies to them, they state that this provision is unconstitutional. The reserve lands of the Lac Simon Algonquin First Nation are located inside the "south zone" of the *James Bay and Northern Quebec Agreement* territory.

In Côté (1996), the Supreme Court of Canada upheld the Algonquin's Aboriginal right to fish for food, and, based on the testimony on the history examined by the Court, upheld their claim that their ancestral lands lie at the heart of the Ottawa River Basin.

Algonquin Nations have potential rights to exercise their hunting activities in their claimed territory, especially south of the limits of the James Bay and Northern Quebec Agreement territory where project' effects could occur. The Lac Simon and Kitcisakik First Nations declared that they use the land, including along the periphery of the Project study area.

For these reasons, the effects on the current use of lands and resources for traditional purposes by these Nations have been considered and assessed in sections 6.5 and 7.3 of this report.

8.2 Potential Adverse Impacts of the Project on Potential or Established Aboriginal or Treaty Rights

In the course of consultations conducted by the Agency, as part of the Project, the Cree Nation Government stated that it does not anticipate that the Project would adversely affect their treaty rights. Consequently, the Cree Nation expressed the desire to be consulted exclusively on any environmental effects or compensation measures for the Harricana River, which is valued by the Cree. After completing an analysis, the Cree Nation Government and the Agency concluded that the Project has a low potential to cause environmental effects on this river. The Agency is of the view that the Project is unlikely to cause adverse impacts on the rights of the Cree.

The project would cause residual effects on Val D'Or caribou population and its critical habitat that cuts across claimed territory by Algonquin Nations beyond limits of the James Bay and Northern Quebec Agreement's territory. In fact, the project effects could disrupt Val D'Or caribou herd recovery in QC1 range and historically, this specie has been part of resources hunted by Algonquin Nations. As a result, the Project would have adverse effects on the exercise of potential rights to hunt caribou within their claimed territory

The Agency identifies potential effects of the project on current use of lands and resources for traditional purposes by Algonquin First Nations:

- the possible disturbance of moose hunting (winter) and plant picking;
- the inability to set up hunting camps on the land where the mining site would located;
- the disturbance of traditional activities in the sectors adjacent to the mining site due to noise, dust and the perception that the country food are contaminated and therefore unfit for consumption;
- the cumulative loss of traditional land and the cumulative loss of resources (caribou) associated with traditional practices.

As presented in sections 6.5, 6.6 and 6.7, the Project's effects on the Algonquin, when taken separately, would be adverse, but not significant. However, the Project's potential cumulative effects on the current use of the land and resources for traditional purposes would be adverse and significant (section 7.3). The Project is located in an area which, since 1930, has been subject to important mining and forestry developments, as well as urban, recreation and road developments. Indeed, Project's residual effects are in addition to the effects from past, present and future projects and activities and affect in a significant manner the ability of the Algonquin to exercise their rights of fishing, hunting, trapping and picking in their claimed territory.

8.3 Proposed Mitigation and Accommodation Measures

At the end of the environmental assessment, no accommodations are being proposed for the Cree Nation Government since there is no expected impact on their rights as defined in the James Bay and Northern Quebec Agreement.

As for the Algonquin First Nations, several mitigation measures planned by the Proponent (Appendix H) as well as accommodation measures proposed by the Agency in the environmental assessment report and in the potential conditions document would minimize the effects of the Project on potential rights and the practice of their traditional activities. These measures involve fish and fish habitat, migratory birds, the current use of land and resources for traditional purposes, including the caribou, as well as human health, natural and cultural heritage, accidents and malfunctions. In particular, to facilitate the participation of Lac Simon and Kitcisakik First Nations in the follow-up program, the Agency would provide funding under the Agency's funding program. Also, Environment and Climate Change Canada is pursuing discussions with the Government of Quebec and the Algonquin Nations to explore the possibility of an agreement for the recovery of the Val d'Or caribou population.

The Agency would ask the Proponent to establish a communication plan to share information with the Lac Simon and Kitcisakik First Nations regarding the mine's operating program, follow-up programs as well as corrective measures, if applicable.

8.4 Issues to be Addressed During the Regulatory Approval Phase

The Project would take place on land claimed by the Lac Simon and Kitcisakik First Nations under their Indigenous rights and for which they have confirmed their historic occupation and current use of the land. They stated that they have never surrendered their Indigenous rights or Indigenous title to this land. The issues associated with the determination of rights and title (in other words, issues of governance of the area) fall outside the scope of the environmental assessment and would be settled in the context of negotiations with the governments of Quebec and Canada or before the courts. These issues have been sent to the Department of Indigenous and Northern Affairs Canada.

If the project is authorized, Environment and Climate Change Canada would ensure that the proponent respects the requirements of the *Metal Mining Effluent Regulations*. The proponent would then be required to monitor effluent quality and any changes affecting fish and their habitat downstream of the project. Environment and Climate Change Canada has the authority to take enforcement action if the proponent violates the provisions of the *Metal Mining Effluent Regulations*.

The Agency's Compliance and Enforcement Unit is responsible for verifying the proponent's compliance with the conditions in CEAA 2012 Decision Statements. The Compliance and Enforcement Unit can be reached by e-mail at Compliance.Conformity@ceaa-acee.gc.ca.

8.5 Agency Conclusion Regarding Impacts to Aboriginal Rights

The Agency is of the view that the mitigation measures presented in this environmental assessment report as well as the potential conditions recommended to the Minister of Environment and Climate Change Canada are essential to control and mitigate the impacts on First Nations in terms of the potential effects of the Project on potential or established Indigenous or treaty rights, including the rights to fish, hunt, trap and pick plants.

9 Conclusions and Recommendations of the Agency

In order to conclude on the significant adverse environmental effects of the Project and to define the key mitigation measures and follow-ups that would need to be implemented by the Proponent, the Agency has taken into consideration:

- The environmental impact statement, the technical reports and the additional information documents provided by the Proponent;
- Comments from the Lac Simon First Nation;
- Comments from the Kitcisakik First Nation;
- Comments from the public;
- Comments from the Organisme de bassin versant Abitibi-Jamésie, the Société de l'eau souterraine de l'Abitibi-Témiscamingue and the Conseil régional de l'environnement de l'Abitibi-Témiscamingue; as well as
- The advices from expert federal authorities.

The environmental effects have been determined using assessment methods and analytical tools that reflect current best practices of environmental and socio-economic assessment experts, including the consideration of cumulative effects and potential structural failures, accidents and malfunctions.

The Agency takes into account that the Project would be located in a territory which, since 1930, is experiencing an expansion of mining and forestry activities as well as important urban, recreational and road developments. Although the contribution of the Project is small, the Agency concludes that the proposed Project is likely to cause significant cumulative adverse environmental effects on the current use of lands and resources for traditional purposes by Indigenous peoples, despite the implementation of mitigation measures, and would make recommendations to that effect to the Minister of Environment and Climate Change. The Project would cause disruption of the ancestral land for which access and use have greatly deteriorated over the past 50 years. The Project could adversely affect the survival and recovery of the Val-d'Or caribou population, which would contribute to a significant change over the last 50 years as far as the availability of wildlife hunted by First Nations. The Project would therefore have an impact on potential caribou hunting rights of Algonquin First Nations of Lac Simon and Kitcisakik in the Algonquin claimed territory.

In addition, the Agency concludes that the Project is not likely to cause in significant adverse environmental effects on other components of the environment that are under federal jurisdiction in light of the implementation of mitigation measures.

To address the scenario that the project is authorized, the Agency established mitigation and accommodation measures as well as the requirements of a follow-up program that would be proposed to the Minister of Environment and Climate Change when it would establishe the conditions in the decision statement for the Project under the *Canadian Environmental Assessment Act, 2012*. Conditions issued by the Minister of Environment and Climate Change would become legally binding on the Proponent if the Minister ultimately issues a decision statement indicating that the Project may proceed.

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11 Appendices

Appendix A Summary of the federal and provincial regulatory framework for valued components in the environmental assessment

The table below summarizes the provincial and federal framework for each valued component identified in the environmental assessment. To determine the significance of the residual environmental effects of the Arnaud project, the Agency took into consideration, to the extent possible, all applicable federal and provincial acts and regulations as well as criteria and/or guidelines.

Component	Indicator	Canada	Quebec
Fish and habitat	Water resources	The *Metal Mining Effluent Regulations* apply to all Canadian metal mines (except placer mines) exceeding an effluent flow rate of 50 cubic metres per day at any time after the regulations were registered and that deposit effluent into natural water bodies frequented by fish. The *Metal Mining Effluent Regulations* specifies the maximum concentration limits for arsenic, copper, cyanide, lead, nickel, zinc, total suspended solids, radium-226 and pH in mine effluent (the pH of the effluent must be equal to or greater than 6.0 but not greater than 9.5). Mines subject to the *Metal Mining Effluent Regulations* are also required to conduct environmental effects monitoring studies in accordance with prescribed criteria. The objective of environmental effects monitoring is to evaluate the effects of mining effluent on the receiving aquatic environment, specifically with regard to effects on fish, fish habitat, and the use of fisheries resources. The substances that must be measured in environmental effects monitoring studies are aluminum, cadmium, iron, mercury, molybdenum, selenium, ammonia and nitrate. http://laws-lois.justice.gc.ca/eng/regulations/SOR-2002-	Directive 019 on the mining industry is the tool currently used to analyze mining projects that require a certificate of authorization to be issued under Quebec's *Environment Quality Act*. It includes provisions designed to protect surface water and groundwater. With regard to surface water, Directive 019 sets out the allowable concentrations related to mining effluent (e.g. pH, arsenic, copper, iron, nickel, lead, zinc, cyanide, hydrocarbons and suspended solids). To protect groundwater, the operator must, among others, install a groundwater monitoring network around at-risk facilities, except where all the underlying hydrogeological formations are Class III and have no hydraulic connections. http://www.mddelcc.gouv.qc.ca/milieu_ind/directive019/ (French only). Environmental discharge objectives are concentrations and loads that can be released into an aquatic environment and that take into account the characteristics of the discharge and the receiving environment, as well as the water quality level necessary to maintain water uses. In the mining sector,

Component	Indicator	Canada	Quebec
		222/ Canadian water quality guidelines are intended to provide protection of freshwater and marine life from anthropogenic stressors such as chemical inputs or changes to physical components. Guidelines are numerical concentrations or narrative statements. Ambient water quality guidelines developed for the protection of aquatic life provide the science-based benchmark for a nationally consistent level of protection for aquatic life in Canada. http://ceqg-rcqe.ccme.ca/en/index.html#void The List of Toxic Substances in Schedule 1 of the *Canadian Environmental Protection Act* includes substances that are considered to be toxic as defined in Section 64 of the Act. The Government of Canada has the authority to regulate and authorize other instruments to prevent or control the use and/or discharge of these substances. Substances are added to Schedule 1 of *Canadian Environmental Protection Act* by the Government of Canada based on the Ministers of Environment and Health's recommendation. https://www.ec.gc.ca/toxiques-toxics/default.asp?lang=En&n=98E80CC6-1	Proponents are required to comply with the standards (limits) set out in Directive 019, and sometimes, when treatment technology permits, to strive to meet the environmental discharge objectives. The province encourages Proponents to consider environmental discharge objectives as continuous improvement targets and to study the proposed environmental discharge objectives with regard to the analytical, economic and technical feasibility related to water treatment. http://www.mddelcc.gouv.qc.ca/Eau/oer/index.htm (French only). Quality criteria are established for each contaminant and each water use. The quality criteria for the prevention of contamination of water and aquatic organisms are intended to protect water and aquatic organisms from contamination that could pose a threat to current and future human consumption. http://www.mddelcc.gouv.qc.ca/Eau/criteres_eau/fondements.htm#sante-humaine (French only).
Fish and habitat		The *Fisheries Act* is aimed mainly at protecting the productivity of commercial, recreational and Aboriginal fisheries. Section 35 of the Act states that no work,	The *Wildlife Conservation and Enhancement Act* (establishes various wildlife conservation bans and various safety standards. It also sets out the rights and obligations of hunters, fishermen and trappers. Under section 128.6, it is prohibited to undertake

Component	Indicator	Canada	Quebec
		undertaking or activity may be carried out that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery, unless authorization for such purpose is obtained from the Minister of Fisheries and Oceans. All serious harm to fish would be addressed through a fish habitat compensation plan to offset the loss of fish habitat. http://laws-lois.justice.gc.ca/eng/acts/F-14/page-10.html#docCont Furthermore, section 36 of the Act states that "no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish, or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water." The Governor in Council may, however, permit the use of a natural water body frequented by fish for the disposal of mine waste. This requires an amendment to the *Metal Mining and Effluent Regulations* so that the water body can be added to Schedule 2 thereof. In such a case, the project Proponent would develop and implement a fish habitat compensation plan to offset the loss of fish habitat in accordance with section 27.1 of the *Metal Mining and Effluent Regulations*. Certain fish species are protected under the *Species at Risk Act* (refer to the section on birds for more details).	any activity that could alter a biological, physical or chemical element specific to the habitat of the animal or fish targeted by that habitat. However, the Minister may authorize such activity on the terms and conditions he determines. Wildlife habitats include fish habitats and are defined in the *Wildlife Habitat Regulations*. In Quebec, eight fish species are designated as vulnerable or threatened within the meaning of the Act (Twenty-five other species are identified as likely to be designated threatened or vulnerable (refer to the Terrestrial Wildlife and Habitat section for more details on this legislation). *Wildlife Conservation and Enhancement Act* http://legisquebec.gouv.qc.ca/en/ShowDoc/cs/C-61.1 *Wildlife Habitat Regulation* http://legisquebec.gouv.qc.ca/en/ShowDoc/cr/C-61.1,%20r.%2018 *Loi concernant la conservation des milieux humides et hydriques :* (French only): http://www.mddelcc.gouv.qc.ca/eau/milieux-humides/loi.htm This Act allows the preservation, restoration or creation of new environments to counterbalance the inevitable losses of wetlands and waterways and to plan the development of the territory from a watershed perspective, taking into account the functions of these essential environments.
Greenhouse		Any facility with annual greenhouse gas emissions of 50	*Regulation respecting mandatory reporting of certain emissions*

Component	Indicator	Canada	Quebec
gases		000 tonnes CO_2 eq or more is required to report them to Environment Canada's Greenhouse Gas Emissions Reporting Program (refer to section 46 of the *Canadian Environmental Protection Act*). http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=040E378D-1	*of contaminants into the atmosphere* Emitters are required to report their GHG emissions. The reporting threshold for GHG emissions is 10,000 tonnes of CO_2 eq. http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=3&file=/Q_2/Q2R15_A.htm
Species at risk	Terrestrial Wildlife and Habitat	The purposes of the *Species at Risk Act* are to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened. The Agency must identify adverse effects of the project on species and their critical habitat, and ensure that measures are taken to avoid or lessen those adverse effects; and to monitor them and ensure that such measures are consistent with any applicable recovery strategy and action plans. *Species at Risk Act* http://laws-lois.justice.gc.ca/eng/acts/S-15.3/page-9.html	The *Act respecting threatened or vulnerable species* applies to threatened or vulnerable plant and animal species designated under the Act which live in Quebec or are imported into Quebec. The Act covers 38 species, of which 20 are designated threatened and 18 as vulnerable. To this is added the list of wildlife species likely to be designated as threatened or vulnerable, which comprises 115 species. Recovery plans are established for threatened and vulnerable species, and committees of experts monitor the implementation of these plans. Once a species is officially designated as "threatened" or "vulnerable," management and protection of the species falls under the *Act respecting the conservation and development of wildlife*. The provisions of the *Act respecting the conservation and development of wildlife* and the *Regulation respecting wildlife habitats* apply to wildlife and its habitat (refer to the section on fish and fish habitat). White-tailed deer yard, areas frequented by caribou, habitats of a threatened or vulnerable wildlife species, muskrat habitat, salt licks and shelter stands for white-tailed deer are wildlife habitats within the meaning of the *Regulation respecting wildlife habitats*.

Component	Indicator	Canada	Quebec
			Act respecting threatened or vulnerable species http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/E_12_01/E12_01_A.htm
Migratory birds		In Canada, as many as 658 different species of birds have been identified, **including 555 migratory species covered by the *Migratory Birds Convention Act, 1994*. This Act and its regulations (*Migratory Bird Regulations* and the *Migratory Bird Sanctuary Regulations*) provide protection of migratory birds, *including the prohibition against disturbing or destroying the nests and eggs of migratory birds*.** **For example, under subsection 5.1 of this Act, it is prohibited to deposit a substance that is harmful to migratory birds in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.** **Certain bird species are protected under the *Species at Risk Act* (refer to the section on terrestrial wildlife and its habitat for more details).** ***Migratory Birds Convention Act, 1994*** http://laws-lois.justice.gc.ca/eng/acts/M-7.01/page-2.html ***Migratory Birds Regulations*** http://laws-lois.justice.gc.ca/eng/regulations/C.R.C.%2C_c._1035/	**The provisions of the above-mentioned *Act respecting the conservation and development of wildlife* and the *Regulation respecting wildlife habitats* apply to birds and their habitat (refer to the section on fish and fish habitat). Cliffs inhabited by a colony of birds, the habitat of a threatened or vulnerable wildlife species, heronries, and islands or peninsulas inhabited by a colony of birds are habitats within the meaning of the *Regulation respecting wildlife habitats*.** ***Act respecting the conservation of wetlands and bodies of water* :** **(French only):** http://www.mddelcc.gouv.qc.ca/eau/milieux-humides/loi.htm **This Act allows the preservation, restoration or creation of new environments to counterbalance the inevitable losses of wetlands and waterways and to plan the development of the territory from a watershed perspective, taking into account the functions of these essential environments.**

Component	Indicator	Canada	Quebec
		Migratory Bird Sanctuary Regulations http://lois-laws.justice.gc.ca/eng/regulations/C.R.C.%2C_c._1036/	
Human health	Air Quality	Canadian Ambient Air Quality Standards are health-based air quality objectives for pollutant concentrations in outdoor air. These standards relate solely to fine particulate matter and ground-level ozone, two pollutants of concern to human health and the major components of smog. http://www.ec.gc.ca/default.asp?lang=En&n=56D4043B-1&news=A4B2C28A-2DFB-4BF4-8777-ADF29B4360BD	*Clean Air Regulation* and air quality criteria The province uses standards and criteria to assess air quality and to study projects generating air contaminant emissions that are submitted to it for authorization. The standards consist of maximum values and are set out in the *Clean Air Regulation*. Criteria are reference levels used to evaluate emissions of certain contaminants that are not regulated. http://www.mddelcc.gouv.qc.ca/air/criteres/index.htm
Human health	Drinking water	Guidelines for Canadian Drinking Water Quality are intended to protect the health of the most vulnerable members of society, specifically children and the elderly. The guidelines set out the basic parameters that every water system should strive to achieve in order to provide the cleanest, safest and most reliable drinking water possible. http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php	*Quality of Drinking Water Regulation* This regulation sets out water quality standards and controls. Municipal, private, institutional and tourism-related systems providing drinking water for more than 20 people are subject to monitoring of drinking water quality. Operators of drinking water systems have primary responsibility for providing Quebecers with quality drinking water. The province assumes responsibility for regulatory monitoring and issuance of the authorizations required for facilities. http://www.mddelcc.gouv.qc.ca/eau/potable/brochure/
Human health	Acoustic environment (Noise and vibration)	Health Canada does not have any noise guidelines or thresholds or enforceable standards. Health Canada's approach to noise assessment is to consider a variety of internationally recognized standards for acoustics, such as CAN/CSA ISO standards. Health Canada considers the following noise-induced endpoints	Directive 019 on the mining industry provides that the acoustic level of a fixed source associated with a mining activity must be evaluated in accordance with the provisions in Instruction Note 98-01 (handling of noise-related complaints and requirements pertaining to companies causing the noise). Measured noise levels must comply with the requirements in the instruction

Component	Indicator	Canada	Quebec
		as health effects: noise-induced hearing loss, sleep disturbance, interference with speech comprehension, complaints, and change in percent highly annoyed (%HA). http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ_assess-eval/index-eng.php	note. Directive 019 also includes requirements related to vibrations caused by blasting, including maximum vibration velocities as a function of ground vibration. Directive 019: http://www.mddelcc.gouv.qc.ca/milieu_ind/directive019/ Instruction Note 98-01: http://www.mddelcc.gouv.qc.ca/publications/note-instructions/98-01.htm
Natural or cultural heritage and sites or historical, archaeological, paleontological or architectural structures			Research on/discovery of archeological sites is governed by the Quebec *Cultural Property Act*. The Act provides that legal protection is accorded to "recognized" and "classified" archeological sites. It specifies that no person may alter, restore, repair, change in any manner or demolish all or part of any recognized cultural property or any classified cultural property. http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/B_4/B4_A.html

Source: AMEC, Rainy River EIS

Appendix B Residual effect rating criteria

Definitions

Reversibility

Extent to which the effect can be reversible and the valued component can return to its pre-project status.

Extent

Spatial area over which the effect occurs, categorized in relation to the study areas established for the VC (Project site, limited or extended area).

Effect magnitude

In general, the magnitude of the effect indicates the degree of disturbance (change) experienced by the environmental component under study. The magnitude assessment takes into account the ecological and social context of the component. Magnitude also incorporates the concept of moment that refers to the life cycle of the component (migration, reproduction, food, etc.). The magnitude may be low, moderate or high. A definition of the specific magnitude for each valued component is presented below.

Effect duration

The duration specifies the time dimension of the effect. It assesses the time during which the effect of an intervention would be felt by the assigned valued component as well as its frequency (continuous or discontinuous character). The effect duration may be short, moderate or long.

All valued components

Reversibility

High: Would fully recover after the project site is reclaimed.

Partial: Would partly recover after the project site is reclaimed.

Low: The effects would persist; they are permanent.

Extent

Project site: The effects are limited to the project site and affect a small area of a range, a home range or a watershed, a trapline.

Local (limited study area): The effects extend beyond the project site and affect a larger area of a range, home range or watershed, such as a trapline or district.

Regional (extended study area): The effects extend to the regional assessment area, affecting large areas of one or more ranges, home ranges, several watersheds, several traplines or several districts of a city.

Climate: Greenhouse Gas Emissions

Low: Project emissions are a small contribution to provincial or national emissions.

Moderate: Emissions represent a moderate contribution to provincial or national emissions.

High: Emissions represent a high contribution to provincial or national emissions.

Fish and fish habitat

Magnitude

Low: The effect results in habitat modification that does not limit or reduce the ability of fish to use these habitats.

Moderate: Habitat modification that limits or reduces the ability of fish to use these habitats, but the damage may be offset through a compensation plan under the Fisheries Act.

High: Habitat modification that limits or reduces the ability of fish to use these habitats and that would not be offset through a compensation plan under the Fisheries Act

Duration

Short term: less than a spawning or rearing period.

Medium term: over several (2–3) spawning or rearing periods.

Long term: over multiple (3 and more) spawning or rearing periods.

Migratory birds

Magnitude

Low: Low area of destroyed habitat and no risk of mortality and disturbance.

Moderate: Small area of habitat destroyed and low risk of mortality and disturbance.

High: Large area of habitat destroyed and bycatch or adverse effect on the recovery of one or more species at risk that are subject to a recovery strategy under the Species at Risk Act.

Duration

Short term: The effect affects less than one breeding season / generation.

Medium term: The effect affects several breeding seasons / generations or a project phase.

Long-term: The effect affects multiple breeding seasons / generations or project phases.

Current use of lands and resources for traditional purposes

Magnitude

Low: Very small detectable change from baseline; no exacerbation of existing conditions. Little to no alteration of behaviour is required for current Indigenous use.

Moderate: Varies from baseline and may result in noticeable changes to current Indigenous use. The project has repercussions that modify the quantity and quality of available resources and/or access to the territory so that current use is affected. Some behaviours are changed, but current use is not compromised.

High: Varies from baseline to a high degree. The project has repercussions that modify the quantity and quality of available resources and/or access to the territory. Current Indigenous use is no longer possible in preferred locations and ways.

Duration

Short term: The effects are limited to one hunting season.

Medium term: The effects extend over a few hunting seasons and do not entail the possibility of the site being abandoned.

Long term: The effects extend over several hunting seasons and result in the site being abandoned.

Indigenous peoples - health and socio-economic conditions

Magnitude

Low: Low health risk, with exposures below health guidelines. Residual effects offset by mitigation and management options. The risks are limited because the area is little used by First Nations. Also the applicable standards would be respected for air and water quality and noise.

Moderate: Health risks, with exposures below, but close to, health guidelines. Residual effects would persist despite mitigation and management options. The risks are average since the area is used by First Nations, but the applicable standards would be respected for air and water quality and noise.

High: Health risks, with exposures higher than the health guidelines. The risks are high since the area is used by First Nations. Exceedances of applicable standards are to be expected for air and water quality and noise.

Duration

Short term: The effects are limited to one season.

Medium term: The effects extend over a few seasons.

Long term: The effects extend over several seasons.

Reversibility

Reversible: Changes to human health are reversible if the exposure ceases (i.e., temporary illness).

Irreversible: Changes to human health are irreversible and would persist if exposure ceases (i.e., cancer effects).

Physical and cultural heritage and historical and archaeological sites and structures

Magnitude

Low: The project is not located near archaeological sites and no indirect affects is anticipated to the integrity of the sites.

Moderate: Displacement or compaction of small portions of archaeological sites, changes that indirectly affect the integrity of archaeological sites, loss of access.

High: Displacement or compaction of substantial and intact portions of at least one significant site. Changes that directly affect the integrity of archaeological sites, loss of significant access to significant sites.

Duration

Short term: Measurable for less than one month.

Medium term: Residual effects are measurable over a period of less than 5 years.

Long term: The effects are permanent.

Appendix C Residual Effect on Valued Components – Significance Determination Grid

Magnitude	Extent	Duration	Reversibility	Significance	Magnitude	Extent	Duration	Reversibility	Significance	Magnitude	Extent	Duration	Reversibility	Significance
High	Regional (Extended study area)	Long	Low	Very high	Moderate	Regional (Extended study area)	Long	Low	High	Low	Regional (Extended study area)	Long	Low	Medium
			Partial	Very high				Partial	Medium				Partial	Low
			High	High				High	Medium				High	Low
		Medium	Low	Very high			Medium	Low	High			Medium	Low	Medium
			Partial	Very high				Partial	Medium				Partial	Low
			High	High				High	Medium				High	Low
		Short	Low	High			Short	Low	Medium			Short	Low	Medium
			Partial	High				Partial	Medium				Partial	Low
			High	High				High	Medium				High	Low
	Local (Limited study area)	Long	Low	High		Loca (Limited study area)I	Long	Low	Medium		Local (Limited study area)	Long	Low	Low
			Partial	High				Partial	Medium				Partial	Low
			High	High				High	Medium				High	Low
		Medium	Low	High			Medium	Low	Medium			Medium	Low	Low
			Partial	High				Partial	Medium				Partial	Low
			High	Medium				High	Medium				High	Very Low
		Short	Low	High			Short	Low	Medium			Short	Low	Low
			Partial	High				Partial	Medium				Partial	Very Low
			High	Medium				High	Low				High	Very Low
	Project site	Long	Low	High		Project site	Long	Low	Medium		Project site	Long	Low	Low
			Partial	High				Partial	Medium				Partial	Low
			High	Medium				High	Low				High	Very Low
		Medium	Low	High			Medium	Low	Medium			Medium	Low	Low
			Partial	Medium				Partial	Medium				Partial	Very Low
			High	Medium				High	Low				High	Very Low
		Short	Low	High			Short	Low	Medium			Short	Low	Low
			Partial	Medium				Partial	Low				Partial	Very Low
			High	Medium				High	Low				High	Very Low

* Only residual effects with very high and high significance have a significant effect within the meaning of the *Canadian Environmental Assessment Act,2012*.

Appendix D Environmental Effects Assessment – Summary

Potential residual adverse environmental effects	Characterization of potential residual adverse environmental effects	Significance of potential residual adverse environmental effects
Fish and fish habitat		
• A 17% reduction in the area of the Watercourse 3 watershed area resulting in a reduction in runoff into this watercourse; • Low probability of water contamination from suspended solids, metals and acid mine drainage.	Magnitude: Low – effect on habitat that does not limit or reduce the ability of fish to use these habitats (no habitat loss and low contaminant intake). Extent: Limited – limited to Watercourse 3. Duration: Long – since low levels of contaminants in the habitat could occur in all phases of the project and after the pit has been flooded. Reversibility: Partial since even if the discharged water was in compliance with the *Metal Mining Effluent Regulations*, the trace of the contaminants they contain could be persistent.	The project is not likely to result in significant adverse environmental effects on fish and fish habitat.
Migratory birds – (including birds at risk)		
• A 93-hectare reduction in migratory bird habitat, including 40 permanent hectares; 990 pairs of ground nesting birds would lose nesting habitat; • Likelihood that the project would result in migratory bird mortality through nest destruction and bycatch.	Magnitude: Medium – considering the small area of habitat that would be destroyed as well as the low risk of mortality and disturbance. Extent: Local – habitat loss and disturbance would not exceed project site boundaries. Duration: Long – habitat loss caused by the mine site. Reversibility: Partial – habitat losses associated with pit development would be irreversible, but habitat loss associated with the remainder of the mine site would be reversible as the Proponent plans to revegetate it.	The project is not likely to result in significant adverse environmental effects on migratory birds.
Transboundary environmental effects		
• Greenhouse gas emissions: 63,031 tonnes of carbon dioxide equivalent over the life of the project, or approximately 10,500 tonnes of carbon dioxide equivalent per year.	Magnitude: Low because the project's GHG emissions would be slightly above the mandatory reporting threshold of 10,000 tonnes of carbon dioxide per year in the Quebec *Regulation Respecting Mandatory Reporting of Certain Emissions of Contaminants into the Atmosphere*, below the threshold of 25,000 tonnes of carbon dioxide equivalent per year of the Quebec *Regulation Respecting a Cap-and-Trade System for Greenhouse Gas Emission Allowances* that obliges companies to enter the market below the threshold of 50,000 tonnes of carbon dioxide equivalent per year of mandatory reporting provided for by the	The project is not likely to result in significant adverse transboundary environmental effects.

Potential residual adverse environmental effects	Characterization of potential residual adverse environmental effects	Significance of potential residual adverse environmental effects
	Greenhouse Gas Emissions Reporting Program established under the *Canadian Environmental Protection Act (1999)*.	
Valued component – Indigenous peoples – Current use of lands and resources for traditional purposes		
- Effect on access to the mine site (100 hectares during operation, 40 hectares after closure). - Change in wildlife resources. - Perceived loss of quality of resources.	Magnitude: Average – high social value of the current use of the territory by the Lac Simon and Kitcisakik First Nations, but the project site is naturally less conducive to fishing and waterfowl hunting, without being unique; it supports moose hunting, caribou hunting (as far as possible), small game hunting and plant harvesting. Current use is not compromised in the limited study area or traditional territory of the Lac Simon and Kitcisakik First Nations. Extent: Limited because changes would be felt on the project site or a small area of the traditional territory of the Lac Simon and Kitcisakik First Nations. Duration: Long since the changes in uses would be felt beyond the closure of the mine, over several hunting seasons, even as far as abandoning the site. Reversibility: Partial because the site would be partially restored and some users could abandon the site.	The project is not likely to result in significant adverse environmental effects on the current use of lands and resources for traditional purposes.
Valued component – Indigenous peoples – Health conditions		
- With little exposure to contaminants emitted from the project, low current land use by Algonquin First Nations for current uses for traditional purposes means that the Algonquins would have low exposure to contaminants; - Low probability of increased concentrations of dust, metals, metalloids and other contaminants in air, animal flesh, plants, fruits or water to exceed health protection standards and criteria.	Magnitude: low considering current low land use, mitigation measures implemented to ensure that provincial standards and criteria are met for air quality, water and noise emissions. Extent: Local – as changes would be felt 1 kilometre beyond the project site boundary. Duration: Long – the extent of the effect would be long since the changes would be felt beyond the closure of the mine. Reversibility: Partial since the emissions would stop when the mine closes and possible contamination of the environment would diminish with the years.	The project is not likely to result in significant adverse environmental effects on Indigenous health conditions.
Valued component – Indigenous peoples – Physical or cultural heritage, and effect on historical, archaeological, paleontological or architectural sites or structures		
- Archaeological studies have shown that the study area has very low archaeological potential; - No elements concerning physical or cultural	Magnitude: Low considering that the project is not located near archaeological sites and that the study area has little potential. Extent: Limited – as it would be limited to the project area.	The project is not likely to result in significant adverse environmental effects on physical or cultural heritage

Potential residual adverse environmental effects	Characterization of potential residual adverse environmental effects	Significance of potential residual adverse environmental effects
heritage or historical, paleontological or architectural sites have been identified.	Duration: Long – the duration of the effect would be long since the effects would be permanent Reversibility: Low – if there was damage, it would be permanent.	and have no effects on Indigenous historical, archaeological, paleontological or architectural sites or structures.

Appendix E Summary of alternatives and options selected by the Proponent

Activity/Alternatives	Criteria	Comments
Ore extraction		
Open pit mine *(option retained)*	Technical	Mineralization from the surface up to a depth of 200 metres; Allows mining of the higher grade portion located at the top.
	Environmental	Not applicable
	Economic	Lower capital costs; Increase in the project's economic viability.
	Social	Not applicable
Underground mining	Technical	Loss of a significant amount of resources in the form of a crown pillar.
	Environmental	Not applicable
	Economic	Increased capital costs and unfavourable economic value; Reduction in the project's economic viability.
	Social	Not applicable
Ore transport		
Highway 117 scenario	Technical	Deterioration of Highway 117; Improvement work required, including the rehabilitation of some curves, the widening of the right-of-way in certain places, work at the intersection of Highway 117 with Sabourin Lake Road.
	Environmental	Dust and noise for users of Sabourin Lake Road and Highway 117; Negligible vegetation loss.
	Economic	$438,000
	Social	Nuisance for users of Sabourin Lake Road; Feelings of insecurity about heavy equipment for users; Increased risk of accidents on Sabourin Lake Road.
Manitou Road scenario (Option	Technical	6.7 kilometres of encroachment to join existing Manitou Road.

Activity/Alternatives	Criteria	Comments
retained in the impact study, but removed from the project in February 2017 in favour of the Eacom Road).	Environmental	Vegetation loss of approximately 20 hectares to clear the 6.7 kilometre right-of-way.
	Economic	$2,700,000
	Social	Less nuisance for users of Sabourin Lake Road; Better social acceptability by communities; Road for local use on part of the distance.
Eacom Road (Final option retained)	Technical	31-kilometre logging road authorized by the Government of Quebec and taken into account as of December 2016 by the Proponent. The western portion would be used by the Proponent (8.4 kilometres).
	Environmental	No additional deforestation, as it would no longer be necessary to build the ore transport road originally planned for the project; Greater proximity to the Val-d'Or caribou biodiversity reserve; Crosses the Sabourin River (bridge) and intercepts 5 streams.
	Economic	Sharing unspecified costs with the forestry company Eacom.
	Social	The use of Sabourin Lake Road could be avoided if the western portion of Eacom Road is built before construction starts on the mine site; Route previously authorized by the Government of Quebec.
Location of waste rock dumps, unconsolidated deposit and ore storage area		
Variant A-1	Technical	A 20-metre-high unconsolidated deposit; Two waste rock dumps 34 and 22 metres high south and southeast of the pit; Two ore dumps 20 metres high southwest of the pit.
	Environmental	No encroachment in the peat bog; Distance of less than 60 metres between storage areas and the watercourse; Partial use of unconsolidated deposits for final restoration.
	Economic	Not applicable
	Social	Not applicable
Variant A-2	Technical	A 20-metre-high unconsolidated deposit; Two waste rock dumps 40 and 25 metres high south of the pit;

Activity/Alternatives	Criteria	Comments
		Two ore dumps 20 metres high southwest of the pit.
	Environmental	Encroachment in the wooded peat bog northwest of the pit; Distance of more than 60 metres between storage areas and the watercourse; Partial use of unconsolidated deposits for final restoration.
	Economic	Not applicable
	Social	Not applicable
Variant A-3 (Option retained)	Technical	A 20-metre-high unconsolidated deposit; Segregation between topsoil and overburden; Two waste rock dumps 34 and 28 metres high south and southeast of the pit; A 20-metre-high ore dump southwest of the pit.
	Environmental	No encroachment in the peat bog; Distance of more than 60 metres between storage areas and the watercourse; Partial use of unconsolidated deposits for final restoration.
	Economic	Not applicable
	Social	Not applicable
Method for containing potentially acid-generating waste rock		
Design 1: Backfilling and rip-rap of potentially acid generating waste rock into the pit	Technical	One of the most effective methods for the prevention of acid mine drainage. Flooding does not prevent neutral mine drainage; Moderate complexity. Requires hydrogeological and geochemical studies to determine the impact on groundwater quality; No possibility of progressive restoration. Complete flooding would take several years; The potentially acid-generating waste rock is used to backfill the pit; Low maintenance and post-restoration maintenance requirement. Water quality monitoring.
	Environmental	Uncertainty about the impact on the quality of groundwater in the event that the dissolution of elements occurs and the oxidation process begins before the flooding.
	Economic	Very high costs (approximately $13 million) related to the transport of a large amount of potentially acid-generating waste rock.
	Social	Use and theoretical performance recognized in the mining field;

Activity/Alternatives	Criteria	Comments
		Potential for impact on groundwater; Few case studies in the literature; No potentially acid-generating waste rock remains on the surface of the site. One of the three piles is removed from the landscape; Noise and dust during restoration.
Design 2: Reprofiling of the dump, multilayer covering and seeding (Option retained)	Technical	Recognized method effective against acid mine drainage. Water infiltration being limited, the method is also effective against neutral mine drainage; Complex method that requires, among other things, laboratory tests, recovery studies, water balance and modelling; Progressive restoration possible; Reuse of non- potentially acid-generating waste rock crushed for the preparation of the covering surface, a significant amount of overburden and topsoil as covering materials; High requirement for post-restoration monitoring and maintenance: monitoring of water quality, essential monitoring and maintenance of the recovery to ensure good performance.
	Environmental	The longevity of the recovery may be affected by freeze/thaw and wetting/drying cycles. Effectiveness of the method demonstrated with good design, construction, maintenance and a good quality assurance and control program.
	Economic	Moderate costs of approximately $4 million for the transport of materials.
	Social	Method well documented in the literature by the program for the neutralization of drainage water into the environment. Several sites in place in the context of orphan sites in Quebec; The potentially acid-generating waste rock dump, covered and vegetated, would not be visible by residents in the sector; A large amount of granular material would be transported during the restoration.
Design 3: Reprofiling the dump, covering with a geomembrane and seeding	Technical	Recovery method recognized and used in high-risk tailings in particular. Because water infiltration is limited, the method minimizes acid mine drainage and neutral mine drainage; Complex method: Stability analysis, anchor design, water pressure management, membrane protection system, several layers to be put in place, membrane welding by specialists, choice of construction period (stretching and contraction of the membrane); Progressive restoration possible; Reuse of non- potentially acid-generating waste rock crushed for the preparation of the covering surface, overburden and topsoil as covering materials;

Activity/Alternatives	Criteria	Comments
		High requirement for post-restoration monitoring and maintenance: monitoring of water quality, essential monitoring and maintenance of the recovery to ensure good performance.
	Environmental	There is a risk of membrane rupture and the potentially acid-generating waste rock being exposed to air and water. Performance in the very long term is not yet proven.
	Economic	Moderate costs of approximately $4 million: Membrane-related costs.
	Social	The very long-term performance is not yet known. Few case studies in the literature and poorly documented compared to multilayer recovery; The potentially acid-generating waste rock dump, covered and vegetated, would not be visible by residents in the sector; A large amount of granular material would be transported during the restoration.

Appendix F Characteristics of the variant locations and the configurations of the waste rock, unconsolidated deposits and ore storage areas

Material category	Variant A1	Variant A2	Variant A3
Construction/Preproduction			
Unconsolidated deposit	• Excavation and stockpiling on a temporary dump northeast of the pit. • Height of 20 metres.	• Identical to Variant A1. • Height of 20 metres.	• Same as variant A1, but segregation between topsoil and overburden. • Height of 20 metres.
Waste rock	• Start of mining and stockpiling on two dumps located south of the pit. • Less than 60 metres from the right edge of the watercourse.	• Start of mining and stockpiling on two dumps located south of the pit. • More than 60 metres from the right edge of the watercourse.	• Start of mining and stockpiling on two dumps located south of the pit. • More than 60 metres from the right edge of the watercourse.
Ore	• Start of mining and accumulation on two storage areas located side-by-side southwest of the pit. • No encroachment in the large peat bog northwest of the pit.	• Start of mining and accumulation on two storage areas located side-by-side: one southwest of the pit and the other to the west. • Encroachment in the large peat bog located northwest of the pit.	• Start of mining and accumulation on a single storage area for all ore, located southwest of the pit. • No encroachment in the large peat bog northwest of the pit.
Operation			
Unconsolidated deposit	• Partial use for final restoration work.	• Identical to Variant A1	• Identical to Variant A1
Waste rocks	• Continued mining and stockpiling on two dumps located south and southeast of the pit. • Total height of 34 and 22 metres.	• Continued mining and stockpiling on two dumps located south of the pit. • Total height of 40 and 25 metres.	• Continued mining and stockpiling on two dumps located south and southeast of the pit. • Total height of 34 and 28 metres.
Ore	• Continued mining and accumulation on two storage areas located side-by-side southwest of the pit. • Height of 20 metres each.	• Continued mining and accumulation on two storage areas located side-by-side: one to the southwest of the pit and the other to the west.	• Continued mining and accumulation on a single storage area for all ore, located southwest of the pit. • Height of 20 metres each.

		• Height of 20 metres each.	

Appendix G Summary of Crown Consultations with the Lac Simon and Kitcisakik First Nations

First Nation	Comment or concern	Summary of Proponent's response	Agency response
Fish and fish habitat			
Kitcisakik	Concern about the effect on fish and fish habitat of crossings of Watercourses 5, 6 and 8 and the installation of culverts for the creation of the new road.	Watercourses 5, 6 and 8 would no longer be crossed as the new ore transport road would not be built. The Proponent would use the Eacom logging road.	Only the Watercourse 3 would be crossed. The Agency would require that the Proponent: installs the culvert and associated physical works for crossing the watercourse 3 in accordance with Fisheries and Oceans Canada's *Guidelines for the Design for Watercourse Crossings in Quebec* to ensure the free passage of fish at the watercourse crossing site; installs the culvert and associated physical works for crossing the watercourse 3 between May 15 and September 30 outside the sensitive period for brook trout (Salvelinus fontinalis).
Kitcisakik and Lac Simon	Concern about the road that would be used to transport explosives.	The explosives would be delivered daily by a supplier directly to the holes in the pit. Two potential suppliers of explosives are located in Val-d'Or (in the Enviroparc sector). For this option, the route would consist of Highway 117, East Sullivan Road, Manitou-Goldex Road and the Eacom road (see map page 102 Supplement to Environmental and Social Impact Assessment, Round 2). It is also possible that the explosives would come from Malartic. In this case, the route taken would consist of Highway 117 and the existing Manitou-Goldex Road as well as the Eacom road.	The Agency is satisfied with the Proponent's response regarding the various explosive transport options.
Surface water and groundwater – Quality and flow			
Lac Simon and	Concerns regarding the collection of water	The Proponent has planned ditches that would surround the entire mine site so that all mine waters	The Agency would require that the Proponent:

First Nation	Comment or concern	Summary of Proponent's response	Agency response
Kitcisakik	from waste rock dumps and non- potentially acid-generating waste rock in the event of detection of acid mine drainage during mine operations.	are captured, controlled and treated before being released into the environment. In addition, the Proponent states that the kinetic tests demonstrated the waste rock and the ore do not present a risk of leaching or acidic drainage during the operational phase.	collects all mining waters including pit dewatering waters and the waters of the three peripheral wells and treats them as necessary prior to discharge into the watercourse 3; develop, in consultation with the relevant authorities and prior to operation, follow-up requirements to verify the accuracy of the environmental assessment as it pertains to geochemical characterization of mined materials and the adverse effects associated with their management on the quality of the surface and underground water; control by a suitable mode of restoration the waste rock stockpiles potentially generating acid (the multilayer option is that envisaged). The final effluent from the flooded pit would be treated as required prior to discharge into the watercourse. 3. The Proponent would be required to inspect and maintain the potentially acid generating waste rock pile until restoration is completed and demonstrates its effectiveness.
Lac Simon and Kitcisakik	Concerns about the contamination of Ben, Bayeul and Sabourin Lakes as a result of mining activities. Concerns about water quality during mining operations and after the mine's closure. Questions concerning groundwater contamination to the east and south of the project.	According to the Proponent, the project would take place in a separate watershed from that of Ben, Bayeul and Sabourin Lakes. Mining effluent discharges would not be able to affect them. In addition, the discharges are regulated (Directive 019 and the *Metal Mining Effluent Regulations*). Environmental follow-ups would be required and conducted throughout the mine life as well as after mining operations cease until restoration has been completed and shown to be fully effective. The Proponent has indicated that all developments would be designed in a way to ensure groundwater protection in accordance with the requirements of the Quebec Minister of Sustainable Development, the Environment and the Fight Against Climate Change.	The Agency is satisfied with the Proponent's explanations regarding the absence of environmental effects on Lakes Ben, Bayeul and Sabourin and would have no requirement regarding the protection of these 3 lakes. The Agency would require that the Proponent: comply with the requirements of the *Metal Mining Effluent Regulations* and subsection 36 (3) of the *Fisheries Act* regarding the discharge of designated project effluents into waters frequented by fish; develop, prior to construction and in consultation with First Nations and relevant authorities, follow-up requirements to verify the accuracy of the environmental assessment and to assess the effectiveness of mitigation measures as it pertains to adverse environmental effects on fish and fish habitat caused by change in

First Nation	Comment or concern	Summary of Proponent's response	Agency response
	First Nations interest in receiving the results of the follow-ups to be conducted.	Furthermore, the modelling conducted demonstrated that there was no risk of groundwater contamination. Lastly, monitoring of the quality of groundwater near uses (Bayeul Lake sector) has already begun and would continue until after site restoration according to the monitoring conditions established by the authorities. The Proponent would share the monitoring results upon request.	water quality. The Proponent would: monitor the concentrations of nitrogen compounds in the watercourse 3; sample and analyze sentinel fish populations, benthic invertebrate communities, and sediments in areas exposed to mine effluents, taking into account the *Metal Mining Technical Guidance for Environmental Effects Monitoring* from Environment and Climate Change Canada; develop, prior to construction and in consultation with First Nations and relevant authorities, follow-up requirements to verify the accuracy of the environmental assessment and to assess the effectiveness of mitigation measures related to acid mine drainage from the waste rock stockpile potentially generating acid in the aquatic environment.
Lac Simon	Concerns about water table drawdown as well as impacts on water supply wells for residences on Ben and Bayeul Lakes and on the Sabourin Lake esker.	According to the Proponent, future mine pumping would have no impact on the individual wells of the nearest houses. In addition, the Sabourin Lake esker that crosses the study area would be in no way affected because it is far away and at a higher altitude than the mine. The Proponent also proposes the addition of a piezometer further away from the project to monitor the progress of the drawdown on Bayeul Lake.	The Agency would have no follow-up requirement on Bayeul Lake and Sabourin Esker since the Proponent has adequately demonstrated, according to Natural Resources Canada, that the pumping of the mine would not have any influence on the esker Sabourin and Lake Bayeul
Wetlands			
Lac Simon and Kitcisakik	Mention the importance implementing a wetland compensation plan and the importance of First Nations involvement in the development of	The wetland losses associated with the project would have to be compensated by a project requiring the authorization of the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change. The nature of the projects can vary—for example, the creation of a protected area that includes wetlands. Further discussions to this effect would follow with the Department of	The Agency forwarded this concern in November 2017 to the Pôle d'expertise en consultation autochtone of the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change. In addition, the Agency would require that the Proponent: develop, prior to construction and in consultation with First Nations and competent authorities, follow-up requirements to verify the

First Nation	Comment or concern	Summary of Proponent's response	Agency response
	wetland compensation.	Sustainable Development, Environment and the Fight Against Climate Change. The Proponent commits to informing the First Nations of any projects selected to obtain their input. Meetings can be sought with the two First Nations to discuss project options.	accuracy of the environmental assessment of the adverse environmental effects caused by water table drawdown on wetlands that support migratory birds.
Aboriginal rights			
Kitcisakik and Lac Simon	The Lac Simon and Kitcisakik First Nations reiterate that the historical occupation of the land and Aboriginal rights are not extinguished and that any form of land development must align with their uses and concerns. In addition, even if the traplines on the beaver reserve are outside the study area, the Aboriginal rights recognized by the Supreme Court of Canada in *R. v. Adams* allow Indigenous people to exercise their traditional activities anywhere on the land.	Question addressed to the Crown	Throughout the environmental assessment, the Agency took into account the potential impacts on the Kitcisakik and Lac Simon First Nations. The mitigation measures detailed in the Agency's environmental assessment report concerning fish and fish habitat, migratory birds and birds at risk, public health conditions, and current use of lands for traditional purposes are measures that mitigate the potential impacts of the project on the affirmed rights of the Kitcisakik and Lac Simon First Nations.
Current use of land and resources for traditional purposes			

First Nation	Comment or concern	Summary of Proponent's response	Agency response
Kitcisakik	Concerns about the data submitted for use of the land, as the impact statement describes only the use of the land in connection with winter moose hunting by the Lac Simon First Nation.	The Proponent reports that meetings with representatives of the Kitcisakik First Nation took place on March 23 and May 15, 2015. An information session was organized on October 28, 2015, for Kitcisakik with the goal of presenting the project and anticipated impacts on the environment, and also to solicit the concerns of the First Nation about these impacts. Limited information was available on the use of the land in the project area. Nevertheless, it was indicated that the members of the First Nation avoid the Cadillac Fault sector where the project is located because of past mining operations. Since then, the members of the Kitcisakik First Nation have been afraid to use the plants and game from the sector for food.	Throughout the environmental assessment, the Agency took into account the potential impacts on the Kitcisakik and Lac Simon First Nations. The mitigation measures detailed in the Agency's environmental assessment report concerning fish and fish habitat, migratory birds and birds at risk, public health conditions, and current use of lands for traditional purposes are measures that mitigate the potential impacts of the project on the affirmed rights of the Kitcisakik and Lac Simon First Nations.
Lac Simon	The First Nation disagrees with the Proponent's conclusions, namely, that the effects of the site's mining operations would be minor on Indigenous people and that the effects of the site's closure would be positive for them.	The Proponent reports that, solely on the basis of additional data brought to its attention through the brief produced by the Lac Simon First Nation, no review of the assessment of the project's effects on the current use of land and resources for traditional purposes is required.	Throughout the environmental assessment, the Agency took into account the potential impacts on the Kitcisakik and Lac Simon First Nations. The mitigation measures detailed in the Agency's environmental assessment report concerning fish and fish habitat, migratory birds and birds at risk, public health conditions, and current use of lands for traditional purposes are measures that mitigate the potential impacts of the project on the affirmed rights of the Kitcisakik and Lac Simon First Nations.
Kitcisakik	Concerns about the effects of the project on the beavers, bears and wolves that are trapped on this territory by members of	The Proponent states that moose and black bear are species that use the majority of available forest and wetland types, with a preference for disturbed areas. The habitat on the periphery of the mine site is similar in terms of forest cover and could be used as an alternative habitat for moose and black bear.	The Agency believes that encroachment of the project on a hundred-hectare area of habitat as well as the mine operation activities would affect the use of the local study area by the species of interest, including moose. However, this effect is not expected to have an impact on the abundance or distribution of species valued by Indigenous people as similar habitats are abundant on the periphery

First Nation	Comment or concern	Summary of Proponent's response	Agency response
	the Kitcisakik First Nation.	The Proponent also states that the potential impact on beavers is of minor importance since the Akasaba project does not foresee any direct encroachment on watercourses. Deforestation may impact beavers in the south and southwest portions of Watercourse 3. However, a 15-m buffer of undisturbed vegetation is planned along Watercourse 3, which would reduce this impact.	of the project.
Health of Aboriginal peoples			
Lac Simon and Kitcisakik	Concern about the consumption of fish, berries and wildlife in the project area that could be contaminated by the project and have adverse health effects on the Algonquin.	In 2016, the Proponent conducted a characterization of the initial metal content in soils and in plants (blueberries, Labrador tea and bark and birch leaves) that could be consumed by the Indigenous and non-Indigenous population and/or by game (moose).	The Agency would require that the Proponent: develop, before construction and in consultation with First Nations and the relevant authorities, follow-up requirements to verify the accuracy of the environmental assessment of the adverse effects of contamination of the vegetation that may be consumed for medicinal or dietary purposes by First Nations. As part of the follow-up, concentrations of arsenic, chromium, copper, mercury, nickel, lead, cadmium, selenium and zinc in vegetation, including blueberries (Vaccinium spp.), Labrador tea (Rhododendron groenlandicum) and birch (Betula papyrifera), located in areas adjacent to the designated project and within the direction axis of dominant winds. If the results of the follow-up requirements demonstrate that concentrations of metals in vegetation are higher than those identified by the Proponent in the *État de référence des concentrations en métaux dans les végétaux* (April 2017), the Proponent would undertake a human health risk assessment. develop, prior to construction and in consultation with First Nations and competent authorities, follow-up requirements to verify the accuracy of the environmental assessment and to assess the

First Nation	Comment or concern	Summary of Proponent's response	Agency response
			effectiveness of mitigation measures as it pertains to adverse environmental effects on fish and fish habitat caused by change in water quality..
Atmospheric Environment - Air quality and noise			
Kitcisakik	Concerns about noise disturbance.	The Proponent modelled the noise levels to estimate whether the activities would comply with the regulations in force. Models have also been produced to simulate the vibrations that may result from blasting at the mine. At the edge of the mining property, the vibrations would hardly be felt. Residents closest to the site, at Bayeul Lake 2.5 kilometres away, would not be bothered by the vibrations. The Proponent would also, among other things, install the crusher under a partially closed shelter and restrict the use of certain equipment at night as needed.	The Agency would require that the Proponent: implement measures to mitigate the frequency and magnitude of noise from activities associated with the Project; develop a communication plan in consultation with the Lac Simon and Kitcisakik First Nations indicating the location and scheduling of each activity (including blasting); put in place, with the Lac Simon and Kitcisakik First Nations, a protocol for receiving complaints related to the exposure to noise produced by the project. If required, the Proponent would implement corrective actions to reduce noise.
Lac Simon and Kitcisakik	Concerns about the spread of dust and air contamination.	The Proponent agrees to put in place a dust management plan that would include frequent watering of roads with water or 80%–87% calcium chloride flakes, a dust suppressant approved by the Quebec Bureau de normalisation. In order to reassure the public about the magnitude and extent of dispersion of particles in the air, the Proponent has planned to implement dust deposit tracking. No excess is anticipated at sensitive receptor locations such as rough shelters and residences.	The Agency would require that the Proponent: develop, prior to construction and in consultation with First Nations and relevant authorities, measures to attenuate emissions of dust from the Designated Project that take into account the ambient air standards and criteria set out in the Canadian Quality Standards. ambiant air of the Canadian Council of Ministers of the Environment and the Quebec Government's Clean Air Regulation. The Proponent would use dust suppressants, undertake crushing activities in in a location that is covered and closed and limit the speed of vehicles to 40 kilometres/hour on all roads located within the property limits of the Project; monitors, during the construction and operation phases, the air quality for total suspended particulates and metals using the

First Nation	Comment or concern	Summary of Proponent's response	Agency response
			standards and criteria set out in the Canadian Council of Ministers of the Environment's *Canadian Ambient Air Quality Standards and the Quebec's Règlement sur l'assainissement de l'atmosphère*. The Proponent would have to implement modified or additional mitigation measures that include, at a minimum, a reduction in the frequency or magnitude of mining activities if monitoring results demonstrate exceedances of standards and criteria; notify the Agency in writing within 24 hours of any exceedances observed by the Proponent of standards and ambient air criteria set out in the Canadian Council of Ministers of the Environment's *Canadian Ambient Air Quality Standards and the Quebec's Règlement sur l'assainissement de l'atmosphère*.
Species at risk			
Kitcisakik and Lac Simon	Concerns about the effects of the project on the snapping turtle. For several years, the Kitcisakik First Nation has been conducting inventories for some species at risk in its territory. A snapping turtle was identified and photographed by a wildlife technician along Highway 117 near Colombière. The site is located a few kilometres north of the Akasaba project.	The Proponent is proposing a mitigation measure to conserve a 15-m buffer of undisturbed vegetation along Watercourse 3 that would, among other things, protect the riparian habitat of turtles. Another mitigation measure, which involves not deforesting the mine site during the bird nesting season (May 15 to August 30), would also prevent the mortality of wood turtles that may frequent the terrestrial environments of the mine site during most of its active phase. For the foregoing reasons, the Proponent states that no significant impact is expected on the wood turtle and the snapping turtle for all phases of the Akasaba West Project.	The Agency agrees with the Proponent's conclusion that the project would have no effect on the wood turtle and the snapping turtle.

First Nation	Comment or concern	Summary of Proponent's response	Agency response
Lac Simon	Concerns about the effect of transportation on movement of moose and caribou populations and predator-prey dynamics between moose, wolf and caribou.	According to the Proponent, construction, transportation and traffic could potentially affect the presence of moose. The Proponent states that it has already been scientifically demonstrated that linear corridors, such as roads, allow wolves to travel at higher speeds and be more efficient in their predatory efforts on large ungulates. However, the Proponent believes that due to the density of traffic on Eacom Road, wolves would not be favoured and would not participate in the increased predation of boreal caribou (WSP 2016a). The Proponent states that road accidents involving the death of a caribou could have an adverse effect on vulnerable populations. For the project, this risk seems unlikely because Eacom Road, used for ore transport, would be located in a territory not currently travelled by caribou and unlikely to be in the future. The Proponent also indicates that caribou avoid intensively used roads, which helps to reduce the risk of collision (WSP, 2016a). The Proponent states, however, that despite the low risk of collision with road vehicles, the addition of collision mortality would have a significant adverse effect on the Val-d'Or herd because of the size of its population (WSP, 2017b).	The Agency would require that the Proponent: develops, prior to construction, and implements, during all phases of the designated project, a communication protocol to signal to the employees and contractors of the designated project, including ore transportation truck drivers, f the presence of caribou in the project area. If the Proponent observes or is made aware of the presence of caribou, the Proponent would develop and implement measures to mitigate the adverse environmental effects of the project on caribou caused by collisions with vehicles, including changes in frequency, schedule and procedures of ore transport activities; notify the Quebec Ministry of Forests, Wildlife and Parks of any collision between a vehicle associated with the designated project and a caribou as soon as circumstances permit, notify the First Nations in writing and develop and implement additional attenuation to avoid further collisions; develop an offsetting plan for caribou habitat prior to construction, in consultation with First Nations and relevant authorities and to the satisfaction of Environment and Climate Change Canada.
Kitcisakik and Lac Simon	Concerns regarding the overall impact of the project on woodland caribou. Adding disturbance of caribou habitat to an already	Various actions would be taken by the Proponent to dispel the fears and apprehensions of the First Nations and mitigate the project's impact on woodland caribou. These measures include the following: A caribou-specific management plan would be	The Agency would require that the Proponent: implement measures to mitigate the frequency and magnitude of noise from activities associated; maintain tree buffer, tree buffers around the pit, the waste rock and overburden piles, the ore storage area, the water management

First Nation	Comment or concern	Summary of Proponent's response	Agency response
	highly disturbed area and disturbance related to transportation and noise could have a significant impact. The Lac Simon First Nation believes that every effort should be made to protect the remaining elements of the herd.	developed and implemented in the first year of construction of the site. The details of this plan are currently being discussed with both levels of government; As soon as the mine is no longer in operation, unused work areas would be revegetated by planting softwood species to encourage the return of habitat characteristics suitable for woodland caribou; Regeneration would be followed up and, if necessary, techniques to control the development of hardwood species would be employed; A communication system would be put in place to alert ore truck drivers to any sighting or evidence of caribou on the road. A critical habitat compensation program for woodland caribou would be developed and implemented.	infrastructures and along the access road; control lighting required for the activities associated with the Project, including its direction, timing, magnitude and glare, while meeting operational health and safety requirements; develops, prior to construction, and implements, during all phases of the designated project, a communication protocol to signal to the employees and contractors of the designated project, including ore transportation truck drivers, f the presence of caribou in the project area. If the Proponent observes or is made aware of the presence of caribou, the Proponent would develop and implement measures to mitigate the adverse environmental effects of the project on caribou caused by collisions with vehicles, including changes in frequency, schedule and procedures of ore transport activities; notify the Quebec Ministry of Forests, Wildlife and Parks of any collision between a vehicle associated with the designated project and a caribou as soon as circumstances permit, notify the First Nations in writing and develop and implement additional attenuation to avoid further collisions; Undertake, in consultation with First Nations and the relevant authorities, the gradual reclamation of the project site. The Proponent would use native softwood species, including spruce (picea) and larch (Larix laricina), when undertaking this progressive reclamation; develop follow-up requirements in consultation with First Nations and relevant authorities to assess the effectiveness of site restoration, including the use of native softwood species and the presence of hardwood species. At a minimum, the Proponent would conduct this monitoring for at least 15 years following the end of decommissioning. The Proponent would communicate the results of the follow-up program to First Nations, Environment and Climate

First Nation	Comment or concern	Summary of Proponent's response	Agency response
			Change Canada and other jurisdictions annually;
Lac Simon	Concerns about the cumulative effects of the project. The members of the First Nation are concerned about the loss of potential enjoyment for future generations. This enjoyment is already greatly affected by the combination of occupancy, mining operations and the history of contamination in the area.	According to the Proponent, the Akasaba project is expected to have a non-significant cumulative effect on traditional land use by Algonquin First Nations since it is located in an already heavily disturbed area.	The Agency understands that the study area is already heavily disturbed by mining development, logging, infrastructure and use by non-Indigenous people. These past disturbances have altered the use of the territory by the Algonquins. The Akasaba project would contribute to the cumulative effects particularly regarding land access and the effects on caribou. Throughout the environmental assessment, the Agency took into account the potential impacts on the Kitcisakik and Lac Simon First Nations. The mitigation measures detailed in the Agency's environmental assessment report concerning fish and fish habitat, migratory birds and birds at risk, public health conditions, and current use of lands for traditional purposes are measures that mitigate the potential impacts of the project on the affirmed rights of the Kitcisakik and Lac Simon First Nations.
Project			
Lac Simon and Kitcisakik	Concerns about the abandonment of the mine site in the event of shutdown during operation.	In order to validate the viability of the project, the Proponent conducted a feasibility study with various scenarios, including conservative metal prices. A distinctive feature of the Akasaba West Project deposit is that it also contains copper. It does not depend only on the price of gold. The project feasibility study showed that it is viable. This viability assessment would be redone before the project is started.	The Quebec *Mining Act* sets requirements to ensure the restoration of lands affected by mining activities. Under the Act, the Proponent must submit a restoration plan and a financial guarantee to the Government of Quebec for the restoration of the site.
Kitcisakik and Lac Simon	Concerns regarding the restoration of the ore storage area. The First Nations are asking that	The restoration work described in Chapter 4 of the "Conceptual Restoration Plan," filed with the impact study. This document should be updated to make it a final document for submission to the provincial	The Agency requires the Proponent to: use native softwood species, including spruce (picea) and larch (Larix laricina), when undertaking the gradual restauration of the project

First Nation	Comment or concern	Summary of Proponent's response	Agency response
	species already occurring naturally in the territory be used during revegetation. First Nations also request that the Proponent send them the final restoration plan submitted to the provincial authorities when it is completed.	authorities. The update may include details on the use of local plant species in the revegetation of the site. In addition, the Proponent agrees to reuse the topsoil set aside during the stripping of the site and to use local species whenever possible.	site. The Agency has forwarded the First Nations' concerns regarding the restoration plan to the Department of Sustainable Development, Environment and Climate Change's Aboriginal Consultation Expertise Centre within the framework of the collaboration established under of the Canada-Quebec Agreement.
Kitcisakik and Lac Simon	Questions about the pit restoration scenarios. Both Nations believe that all restoration scenarios should be analyzed before giving their approval.	The Proponent conducted tests to assess the possibility of returning the potentially acid-generating waste rock to the pit at the end of operations. This option is not excluded and the Proponent is continuing its analysis of the potential effects on the quality of the water in the pit relative to potential exceedances of surface water quality criteria and long-term groundwater quality. Golder, which was mandated to carry out the study, would provide a detailed report and its recommendations when the tests are completed. The Proponent is committed to maintaining discussions and informing First Nations as soon as the results of the analysis are available.	The Agency asked the Proponent to keep the First Nations informed of the update of the restoration plan and specifically the final choice of the management method for the acid-generating waste rock stockpiles.

Appendix H Proponent mitigation measures

List of the mitigation, monitoring and follow-up measures that the Proponent has agreed to implement in its environmental impact statement and during the review process.

Valued Component	Mitigation measures proposed by the Proponent according to the valued components of the environmental impact study
Fish and fish habitat	• Locate the parking, refuelling, washing and machinery maintenance areas at least 60 m from any watercourse; • Maintain a 60-metre buffer between the southern edge of the storage areas and an unnamed tributary of the Sabourin River; • Stabilize or control the reworked areas as the work is completed; • Send used oils from the machinery to a disposal site provided for this purpose; • Using ditches, surround the potentially acid-generating waste rock pile and ore storage area so that drainage and runoff water is directed to a basin; • To minimize the erosion of unconsolidated deposit dumps during mine operations, gradually stabilize slopes in an effective manner; • To minimize the dissolution of nitrate and ammonia in mine water, encourage the use of explosives as an emulsion with a low capacity for dissolution; • During the construction period, control suspended matter concentrations; • Treat contact water collected at the mine site as needed before it is released into the environment; • Install a sump in the garage floor and an oil separator on the outlet pipe. Send the wash water to a septic tank that would be emptied periodically and empty the water-fat separator as needed; • Stockpile potentially acid-generating waste rock to limit the development of convection cells by vertical size segregation control using a hopper dumping method with bulldozer levelling;. • Install a (multilayer) overlay on the potentially acid-generating waste rock dump immediately after mining activities are completed in the pit; • In the event that the mine's operations prove to have an effect on private wells (water quality and supply flow), carry out corrective work at the Proponent's expense; • Set up a berm between the two drainage areas; • Set up a portable water treatment plant; • Do not apply a dust suppressant within 50 metres of a recognized watercourse (excluding ditches) and within 30 metres of a drinking water intake; • Prevent the transport of sediments into the aquatic environment by placing windrows at the foot of non- potentially acid-

	generating waste rock dumps and overburdens to prevent increased turbidity beyond the immediate area of the work.
Migratory birds and birds at risk	• Prohibit the movement of machinery outside the boundaries of the work areas and install signs at the edge of the protection perimeter of the designated sensitive areas; • Carry out deforestation outside of the nesting period of birds (from May 15 to August 30). Deforestation would be done in the winter, when possible. In the case where deforestation work is required during the nesting period, the Proponent agrees not to destroy nests by first carrying out an ornithological inventory; • Make workers aware of the potential presence of common nighthawk nests in exposed sectors; • If a nest is discovered, stop work until nesting is complete; • Inspect the embankments and gravel pits for swallow and nighthawk nests and erosion protection measures; • During deforestation, pay close attention to the vegetation on the edge of work areas so as not to damage it. As much as possible, avoid clearing trees outside the deforestation boundaries and in the watercourses; • Where possible, convert the cutting waste and woody debris; • For revegetation work, ensure that the seed mix is free from invasive alien species. Favour seeds of native species appropriate to the hardiness zone; • To prevent the introduction of invasive alien species, be sure to clean the excavation machinery that would be used before it arrives at the mine site so that it is free of mud, animals and plant fragments.
Greenhouse gas emissions	• Possibly use commercial hybrid or alternative fuel vehicles; • Put in place an idle mode reduction policy when using vehicles.
Species at risk: Woodland caribou	• Upon completion of the operation, revegetate unused work areas by planting softwood species to encourage the return of habitat characteristics suitable to woodland caribou; • At the end of mine operations, the restoration program provides for the closure of the ore transport road and reforestation of softwood species, subject to the approval of the responsible authorities and consultation with stakeholders; • Follow up on the restoration and, if necessary, intervene to control the development of hardwood species; • Put in place a communication system to alert ore truck drivers to any sighting or evidence of caribou on the road; • Permanently close secondary roads connecting the ore transport road; • Transport ore by convoy if there is a caribou sighting in the project footprint; • Stop operations or temporary interrupt part of the operations if caribou are observed; • Intensify the transport schedule during the day; • Use light fixtures that provide subdued lighting; • Direct the luminous flux toward the surface to be illuminated; • Limit as much as possible the period and duration of the use of the lights;

	• Install fixed lights so as to avoid light spilling out of the spaces to be illuminated; • Maintain plant buffer zones to limit projected light to the surrounding areas; • Implement a caribou habitat compensation plan.
Current use of of lands and resources	• Establish Indigenous worker integration mechanisms; • Inform the Lac Simon and Kitcisakik First Nations of the nature and schedule of the construction work, operation and restoration of the mine; • Educate mine workers about Indigenous moose hunting activities; • Negotiate agreements with the rough shelter owners that are affected; • Prior to all deforestation work, award a trapping contract to capture as many fur-bearing animals as possible, especially less mobile species such as beaver. Ensure management of beaver activities throughout the life of the project; • Raise awareness among workers about the importance of not feeding animals and not leaving food that would attract fur-bearing animals near work areas. Awareness can be achieved through posters and information sessions; • To minimize disturbance, do not use Sabourin Lake Road; • At the end of the work, rehabilitate and restore the disturbed areas according to the closure plan; • To minimize erosion of overburden dumps, stabilize slopes; • Set up a directional lighting system on the mining complex to minimize radiation to the sky.
Health	Air Quality • To minimize airborne dust during construction in the frost-free period, water dry roads as needed; • To limit the dispersion of dust due to trucking at the operating mine site, wet the running surfaces with water and, if required, dust suppressants; • Perform ore crushing under a shelter to control dust emissions. In addition, equip the crusher with a dust collection or a dust suppression system; • Equip all drilling rigs with dust collection devices; • Limit the speed of mining vehicles to 40 km/h on the mine site; • If a probable trend toward exceeding standards is observed, AEM would modify or discontinue certain activities on its site, thus operating under alternative scenarios, relative to normal mining conditions; • Provide mobile equipment with a broadband audible alarm to signal reverse; • Ensure proper maintenance of the equipment and the good condition of machinery mufflers and catalysts; • Implement an awareness program for machine operators to optimize working methods and avoid clatter of buckets and objects falling from heights;

	- Operate bulldozers on the dumps only during the day; - Install a ground vibration air pressure monitoring network.
	Noise and Vibration - Inform land users of the blasting periods. Blasting would be done by day only, at pre-defined times; - Put in place participatory surveillance of the project's impacts and disturbances through a citizen monitoring committee, an internal community relations service and a continuous communication program to provide information on mine operations, contaminant management, mitigation and environmental monitoring (in the construction, operational and post-closure phases, receive complaints and make necessary adjustments).
	Light - Restrict the emission of light toward the sky using fixtures that produce a simple and uniform lighting that would meet the real lighting needs with a luminous flux that would be directed toward the surface to be illuminated; - Use lights that have no emissions greater than 90 degrees; - Limit as much as possible the period and duration of the use of the lights at night; - Install fixed lights so as to avoid light spilling out of the spaces to be illuminated; - Pay particular attention to the orientation of portable lights and lighting from mobile sources.
Heritage and archaeology	- If any remains of interest are discovered during the work, immediately notify the person in charge of the work and take measures to protect the site.
Accidents and malfunctions	- Inspect the machinery before first use and regularly thereafter to ensure proper condition and proper operation; - Make an emergency kit for the recovery of petroleum products and hazardous materials readily available at all times; - To reduce sampling in borrow pits during the operation, meet the need for granular material from loose deposits and waste rock extracted from the pit or available at the mine site; - Take precautions to avoid any explosive spills when filling boreholes and recover any residual products that may have escaped; - Use double walled fuel tanks that comply with the regulations in effect; - Develop a spill procedure and an emergency plan.

Appendix I **Past, present and future projects considered in the cumulative effects analysis by the Proponent**

Projects, actions and events	Past	Present	Future	Migratory birds	Traditional use of lands by the Algonquins
Planning and development of the land					
Creation of the De La Vérendrye Park in 1939; it became a wildlife reserve in 1979	X				Loss of hunting and fishing grounds and traplines Pressure on the resource
Indigenous Territory and Community					
Advent of motorized transport: seaplane, snowmobile and helicopter	X	X			Improved access to the territory for short stays
Creation of game reserves (1928) and traplines (1948)	X	X			Increased disturbance Institution of some protection of trapping rights
Infrastructure and Services					
Val-d'Or–Senneterre Road (1938) Highway 117 Mont Laurier–Senneterre (1939) Rouyn–Val-d'Or railway track (1937)	X			Habitat loss and modification Increased disturbance	Habitat loss and modification Increased disturbance Colonization and arrival of sport hunters: pressure on resources and land use Improved access to the territory
Val-d'Or, Senneterre and Lebel-sur-Quévillon Airports	X			Habitat loss and modification Increased disturbance	
Logging roads	X	X		Habitat loss and modification Increased disturbance	Potential disruption of traditional hunting, trapping and fishing activities Improved access to the territory
Electrical power lines	X			Habitat loss and modification Increased disturbance	
Rapide-7 (Decelles reservoir, 1941) and	X			Habitat loss and modification	

Projects, actions and events	Past	Present	Future	Migratory birds	Traditional use of lands by the Algonquins
Rapide-2 hydroelectric power stations				Increased disturbance	
Gas pipeline (Along Highway 117)	X			Habitat loss and modification Increased disturbance	
Val-d'Or integrated forest industrial park			X	Increased disturbance	
Use of Lands					
Resort lodges and cottages	X	X	X	Habitat loss and modification Increased disturbance	Potential disturbance of hunting, trapping and fishing activities (increased attendance by non-Indigenous people)
Snowmobile and quad trail in the De La Vérendrye Wildlife Sanctuary (2002) Val-d'Or snowmobile club founded in 1969 Vallée-de-l'Or and Abitibi quad club	X	X	X	Habitat loss and modification Increased disturbance	Potential disturbance of hunting, trapping and fishing activities (increased attendance by non-Indigenous people) Improved access to the territory
Canoe routes: Laflamme, Louvicourt, and Kinojevis Rivers Decelles and Dozois reservoirs Lemoine Lake	X			Increased disturbance	
Outfitters (Villebon, Denis Camp inc. and Camp Jacqueline inc.)	X	X	X	Habitat loss and modification Increased disturbance	Potential disturbance of hunting, trapping and fishing activities and pressure on the resources
Kipawa ZEC [controlled harvesting zone]	X	X	X	Habitat loss and modification Increased disturbance	Potential disturbance of hunting, trapping and fishing activities and pressure on the resource
Urban and rural development of Val-d'Or and Bourlamaque	X	X	X	Habitat loss and modification Increased disturbance	Potential disruption of hunting, trapping and fishing activities
Hunting, fishing and trapping activities	X	X	X	Increased disturbance	Potential disruption of hunting, trapping and fishing activities
Val-d'Or recreational forest	X	X	X	Habitat protection	-

Projects, actions and events	Past	Present	Future	Migratory birds	Traditional use of lands by the Algonquins
Protection and management of wildlife species and habitats					
Recovery plan for woodland caribou in Quebec	X	X			
Recovery Strategy for the Woodland Caribou, Boreal population in Canada		X	X		
Caribou wildlife site management plan for the area south of Val-d'Or		X	X		
Biodiversity reserves		X	X		Traplines protected from mining and forestry
Forest reserve	X	X	X		Traplines protected from mining and forestry
Natural resource development					
Logging (forestry operations and logging) Kipawa, Tembec and Norbord Divisions	X	X	X	Habitat loss and modification Increased disturbance	Pressure on the land and watercourses Potential disruption of hunting, trapping and fishing activities
Twelve mines in operation from 1930 to 1950 in the Val-d'Or area Five mines in operation near Val-d'Or and 69 exploration projects in the Val-d'Or–Amos sector in 2013	X	X	X	Habitat loss and modification Increased disturbance	Avoidance of mined areas and affected areas
Sand pits and other mining activities of surface mineral substances	X	X		Habitat loss and modification Increased disturbance	
Decelles Reservoir (1941) Dozois Reservoir (Bourques dam) (1948)	X				Disturbed water systems and loss of hunting and trapping grounds southwest of Val-d'Or and east of Grand Lac Victoria
Other natural resource development Farming	X			Habitat loss and modification Increased disturbance	Potential disruption of hunting, trapping and fishing activities

Projects, actions and events	Past	Present	Future	Migratory birds	Traditional use of lands by the Algonquins
Natural disturbances and other					
Forest fires, insect outbreaks and windfall	X			Habitat loss, modification and creation	Potential disruption of hunting, trapping and fishing activities

Appendix J Summary of comments received on the Draft Environmental Assessment Report

Key comments received from the public and First Nations on the draft Environmental Assessment (EA) Report are summarized in the table below. Editorial-related comments and comments that identify basic errors in the draft EA Report have been addressed in the final EA Report and are not included in this table.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Alternative means of carrying out the project				
Organisme de bassin versant Abitibi-Jamésie (OBVAJ) Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT) Société de l'eau souterraine Abitibi-Témiscamingue (SESAT)	Concerning the alternatives studied for the method for containing potentially acid-generating waste rock, OBVAJ considers that the option of backfilling and flooding the waste rock in the pit is not the best alternative because of the risks of groundwater contamination. On the same issue, CREAT emphasized that the choice of alternative should be decided before the project is authorized and that it is essential to prioritize the restoration scenario that will provide long-term stabilization of potentially acid-generating waste rock and ensure that the monitoring and maintenance costs are not borne by the taxpayers in the event of insolvency or early release of the proponent. CREAT also pointed out that, during the hearings conducted by the Bureau d'audiences publiques sur l'environnement (BAPE) for this project, it submitted a brief requesting complete or partial backfilling of the pit at the end of mine operations. SESAT, which is also concerned about the uncertainty associated with the choice of the waste rock containment method,	As mentioned in the environmental assessment report, the proponent indicated that additional studies are underway to validate, among other things, the methodology for filling the pit. Depending on the results of these studies, the final choice of the alternative for containment of the waste rock following closure of the mine could be changed. The proponent has agreed with the Quebec Department of Energy and Natural Resources to update the restoration plan in two or three years, which will take into account the results of the additional studies. It should be noted that the closure and rehabilitation of the mine are regulated by the provincial	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	added that it is concerned by the fact that the two waste rock containment alternatives still being evaluated by the proponent are very different in nature and that there is a significant difference in terms of the financial guarantee required under the Quebec *Mining Act*. OBVAJ and CREAT would like to be kept informed of the conclusions of the additional hydrogeological and geochemical studies that are currently being conducted by the proponent to determine the best waste rock containment method. CREAT would like for the proponent's decision concerning the alternative chosen to be made in collaboration with the competent provincial and federal authorities.	government. The Agency passed on this comment to the proponent.		
Organisme de bassin versant Abitibi-Jamésie (OBVAJ)	Concerning the alternatives studied for the location of the waste rock, ore and unconsolidated deposit piles, OBVAJ applauds the change in the configuration of the waste rock, ore and unconsolidated deposit storage areas made by the proponent in order to ensure that all mine water is collected.	The Agency is satisfied that the proponent has sufficiently assessed alternative means of carrying out the project for the purposes of the environmental assessment under the *Canadian Environmental Assessment Act, 2012*.	No changes required.	No changes required.
Agnico Eagle	The additional studies aimed at validating the backfilling and flooding of the waste rock in the pit as a method for containing potentially acid-generating waste rock were completed at the end	The Agency notes that the proponent will submit an update of its restoration plan to the Quebec Department of Energy and Natural Resources	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	of 2017. The conclusions of these studies demonstrate that it would be possible to return the potentially acid-generating waste rock to the pit with little impact. This option will be proposed to the Quebec Department of Energy and Natural Resources for approval during the review of the restoration plan scheduled two years after the start of project operations.	for approval. It should be noted that the closure and rehabilitation of the mine are regulated by the provincial government.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	Concerning the alternatives studied for the transport of the ore between the pit and the Goldex mine concentrator, CREAT expressed concerns about the alternative chosen by the proponent, i.e. the use of the Eacom logging road. CREAT pointed out that the Eacom logging road scenario was authorized by the Quebec government despite an unfavourable opinion concerning the impacts on wildlife from biologists of the Quebec Department of Forests, Wildlife and Parks. According to CREAT, the decision to approve the construction of this road is controversial and is the subject of opinions issued by the BAPE panel.	The Agency is satisfied that the proponent has sufficiently assessed alternative means of carrying out the project for the purposes of the environmental assessment under the *Canadian Environmental Assessment Act, 2012*.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Val-d'Or Chamber of Commerce	Concerning the alternatives studied for the transport of the ore between the pit and the Goldex mine concentrator, the Val-d'Or Chamber of Commerce stressed that the proponent's choice to opt for the construction of a 6.7-km road to connect the mine site to the Manitou Road in order to avoid heavy truck traffic on Highway 117 was based on a public information and consultation process upstream of the project.	The Agency is satisfied that the proponent has sufficiently assessed alternative means of carrying out the project for the purposes of the environmental assessment under the *Canadian Environmental Assessment Act, 2012*.	No changes required.	No changes required.
Organisme de bassin versant Abitibi-Jamésie (OBVAJ)	The alternative chosen for the transport of the ore from Akasaba West to the Goldex plant is the Eacom logging road that passes south of the project site. However, for this alternative, it is planned to build a 230-metre access road to connect the mine site to this road. OBVAJ pointed out that the construction of this 230-metre access road could have environmental impacts on wildlife habitat, water, wetlands and water bodies. OBVAJ recommends that a characterization of the surface right-of-way of this access road be carried out in order to assess the potential impacts of this construction on these environmental components.	The federal committee analyzed the proponent's information concerning the alternative chosen for the transport of the ore and is satisfied with the information provided by the proponent.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Ore transport				
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	**For the ore transport roads, it would be important to verify that the dimensions of the right-of-way, the load-carrying capacity requirements for culverts and bridges, and other engineering aspects that are required for logging companies are compatible with mining use.**	**In the context of this project, the proponent must comply with the various provincial regulations that apply to logging roads and mining roads.** The Agency passed on this comment to the proponent.	**No changes required.**	**No changes required.**
Purpose of the project				
Rouyn-Noranda Chamber of Commerce and Industry, Val-d'Or Chamber of Commerce	**Support for the Akasaba West Project from the perspective of ensuring economic sustainability and demonstrating the project's economic viability.** **As a result of this project, which involves developing a new deposit, additional materials will be available to contribute to the restoration of the former Manitou tailings pond.** **The project will generate major economic benefits for the Abitibi-Témiscamingue region. The Akasaba West deposit represents an investment of $216 million, including $63 million in payroll and the creation of some 100 jobs.**	**The Agency notes that the proponent indicated that the project's objectives are to extract approximately 5.1 Mt of gold and copper ore over a four-year period, maximizing the use of the Goldex mine concentrator and increasing the lifespan of the Goldex mine. The proponent also indicated that this project would maintain the economic benefits for Quebec and the Abitibi-Témiscamingue region.**	**No changes required.**	**No changes required.**
Probe Metals Inc.	**Bill C-69, currently under study, the purpose of which is to modify the Agency's assessment process, incorporates the public interest in its considerations (which includes the creation of jobs**	**The Akasaba West Project is the subject of an environmental assessment under the *Canadian Environmental Assessment Act,***	**No changes required.**	**No changes required.**

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	for the middle class). This aspect of the analysis should be given more weight in the study of the Agnico Eagle project. Indeed, the majority of the mines in Val d'Or will have exhausted their mineral reserves in less than 10 years. Considering the fact that the timeframe necessary to take a mine from the exploration stage to the production stage is generally also some 10 years or more, it is necessary to permit the opening of new mines in order to ensure the sustainability not only of direct jobs in the mining industry, but also of all the jobs related to the supply chain and professional services, based in Val d'Or. The mining industry occupies an important place in the economy of the Abitibi region. This industry must prosper to create quality jobs, for both the Aboriginal and non-Aboriginal communities.	*2012*. The environmental assessment examined the significance of the potential adverse environmental effects that fall under federal jurisdiction as well as the adverse effects of the project on the listed species at risk and their critical habitat. The potential positive socioeconomic impacts of a project do not fall within the scope of the environmental assessment and are not taken into account by the Minister in her decision-making.		
Consultation of the public and Aboriginal peoples				
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT questioned the methods used by the Agency to disseminate information to the public concerning the periods of public consultation since the environmental assessment report states that the Agency did not receive any comments from the public during two consultation periods for this project (from October 21 to November 10, 2014 and from December 5, 2014 to January 5, 2015).	The first public consultation dealt with the summary description of the proponent's project, while the second consultation dealt with the draft version of the Agency's guidelines for the preparation of the environmental impact statement. In both cases, these public	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		consultation periods were announced on the Canadian Environmental Assessment Registry's website and in local newspapers and on local radio stations.		
Agnico Eagle Rouyn-Noranda Chamber of Commerce and Industry Val d'Or Chamber of Commerce	The proponent and the Rouyn-Noranda and Val d'Or Chambers of Commerce stressed that a good neighbour policy is a priority for the proponent and that the proponent has always demonstrated great sensitivity to community concerns. In developing this project, the proponent took into consideration the concerns of the various stakeholders who use the territory in this area (shoreline residents of Bayeul, Ben and Sabourin lakes, the town of Val d'Or, the Lac Simon First Nation, etc.). In addition, the Rouyn-Noranda Chamber of Commerce and Industry considers that the consultation process conducted by the proponent prior to the project and the briefs submitted during the 2017 hearings of the Bureau d'audiences publiques sur l'environnement attest to a degree of consensus in the region which does not appear to have been taken into account by the Agency during its analysis. According to this organization, the Agency appears to have only considered the comments of the First Nations and	Under the *Canadian Environmental Assessment Act, 2012*, the Agency must take into account all the comments received from the public and from First Nations.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	of a few groups that received funding from the Agency to take part in the consultations.			
Agnico Eagle Rouyn-Noranda Chamber of Commerce and Industry	The proponent is interested in continuing its discussions with the Algonquin communities in order to include their concerns in the development of the project. The proponent pointed out that a brief submitted to the Agency by the Lac Simon First Nation in 2015 mentions that this project can generate positive socioeconomic benefits for the members of their community. The Rouyn-Noranda Chamber of Commerce and Industry recommends that Agnico Eagle continue to have discussions with the members of the Aboriginal communities concerned in order to keep them informed about the progress of the project.	The conditions proposed by the Agency will require that the proponent consult the First Nations on various aspects at all phases of the project, particularly concerning: • The development and implementation of the various follow-up programs; • The development and implementation of a First Nations communication plan; • Any changes to the project likely to result in adverse environmental effects; • Changes in ownership, care, control or management of the project.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Fish and fish habitat [subparagraph 5(1)(a)(i) of the Act]				
Organisme de bassin versant Abitibi-Jamésie (OBVAJ)	**OBVAJ had concerns about the physicochemical characterization of surface water in watercourses 2, 3 and 4 to establish baseline conditions. OBVAJ considers that a six-month sampling period is not sufficient to evaluate water quality for drinking water or for the protection of aquatic life. OBVAJ also questions the frequency and timing of the sampling, which could cast doubt on the validity of the results of the water quality characterization study.** **OBVAJ recommends extending the sampling period for the analysis of extractible metals at least for the next two years, but preferably throughout the operational phase of the project.**	**According to the advice received from the expert federal authorities, the information provided by the proponent about the surface water baseline conditions is appropriate.** • **Under the *Fisheries Act*, the mine is subject to the *Metal Mining Effluent Regulations*. Monitoring of the quality of the effluents that will be discharged into the receiving environment during the operational phase will have to comply with the requirements of the *Metal Mining Effluent Regulations*, until closure of the mine.** •	**No changes required.**	**No changes required.**
Organisme de bassin versant Abitibi-Jamésie (OBVAJ)	**OBVAJ was concerned about the results of the proponent's sampling to establish the surface water baseline conditions. The results show values exceeding the provincial and federal water quality**	**The proponent is required to comply with the requirements of the *Metal Mining Effluent Regulations*, Directive 019 on**	**No changes required.**	**No changes required.**

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	criteria for drinking water and for the protection of aquatic life. According to OBVAJ, even if the water discharged by the mine complies with the *Metal Mining Effluent Regulations* (MMER), or Directive 019 on the mining industry, the non-point-source pollution of the mine effluents could worsen the current water quality. OBVAJ recommended conducting regular monitoring of the quality of mine effluents and of the receiving environment in accordance with the requirements of Directive 019 on the mining industry and of the *Metal Mining Effluent Regulations* and to establish, in conjunction with all the stakeholders concerned, a monitoring committee in accordance with section 101.0.3 of the *Mining Act*.	the mining industry and the Quebec *Mining Act*. In addition, the Agency proposed several conditions related to surface water quality, such as measures to control erosion and sedimentation, restrictions on the explosives that can be used on the mine site and the requirement to capture contact water and groundwater around the periphery of the pit.		
Organisme de bassin versant Abitibi-Jamésie (OBVAJ)	OBVAJ is concerned about the construction of a culvert in watercourse 3. Despite the management plan proposed by the proponent, the construction of this culvert could cause inputs of suspended matter in fish habitat, which could result in a qualitative and quantitative loss of fish habitat. The construction of this culvert and the construction of the 230-metre access road between the mine site and the ore transport road also pose a potential risk of an accidental chemical	The Agency proposed several conditions which are intended to prevent or mitigate the potential effects of the construction of culverts or of accidental chemical spills into surface water, specifically: • Installation of the culvert and associated physical works for the crossing of watercourse 3 in	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	spill in watercourses.	accordance with Fisheries and Oceans Canada's *Guidelines for the Design for Watercourse Crossings in Quebec* - Use machinery required for this installation in accordance with Fisheries and Oceans Canada's *Measures to avoid causing harm to fish and fish habitat including aquatic species at risk* issued by Fisheries and Oceans Canada. - Prior to construction, consult the competent authorities on the appropriate measures to prevent accidents and malfunctions.		
Organisme de bassin versant Abitibi-Jamésie (OBVAJ)	OBVAJ considers that the proponent has underestimated the areas of wetlands and water bodies likely to be affected by the project since it does not establish a direct link between fish habitat and wetlands and water bodies. OBVAJ has pointed out that, apart from fish habitat, the survival of several bird species	According to the advice received from the expert federal authorities, the proponent's analysis concerning the potential environmental effects of the project on wetlands and on their functions	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	(migratory and aquatic), and to a lesser extent caribou, could also be compromised by the loss, fragmentation or modification of the swamps and peat bogs that constitute their main habitat. OBVAJ would like the proponent to review its estimate of the area of wetlands and water bodies affected by the project and to prepare a specific environmental compensation plan for the encroachment on wetlands which includes the areas of watercourses and water bodies. It is desirable that the proponent work in conjunction with local stakeholders, particularly the First Nations and OBVAJ, in order to develop compensation projects in the environments that are directly affected by the project.	is appropriate. The proponent has undertaken to implement a wetland compensation plan. The Agency passed on this comment to the proponent.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT shares the concerns and opinions expressed by Environment and Climate Change Canada in the section on "Disturbance of fish and fish habitat through degradation of water quality" in section 6.1.3 of the environmental assessment report. CREAT has pointed out that Environment and Climate Change Canada is of the view "*that monitoring of the integrity and effectiveness of the covering on the potentially acid-generating waste rock pile and monitoring of the groundwater should last the same amount of time. These monitoring periods must be detailed in the final closure plan for the mine site.*" CREAT would like to	As indicated in condition 3.11, the effectiveness of the mitigation measures concerning acid mine drainage will be monitored over a 15-year period.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	know what will be the duration of the monitoring required by the proponent.			
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT requested that monitoring of fish habitats and benthos in the Sabourin River be carried out in order to determine whether the discharge of mining effluents in one of the river's tributaries will affect the river ecosystem, even after closure of the mine site. The potential transport of contaminated sediments into the hydrographic network must be taken into consideration. CREAT would like the Sabourin River to be more clearly identified in the monitoring of the project's effects on fish and fish habitat. In addition to biological monitoring, CREAT would like to see monitoring of the flow of discharges into the tributary of the Sabourin River in order to ensure that its hydrodynamic role is not modified.	Prior to the commencement of mine operations and as required by the environmental effects monitoring program under the *Metal Mining Effluent Regulations*, the watercourses for which physicochemical and biological monitoring will be carried out downstream and upstream of the project will be identified by the competent authorities. It will therefore be determined at that time whether the Sabourin River will be included in this monitoring. In addition, the Agency has proposed condition 3.12, which will require that the proponent develop this monitoring and follow-up program in collaboration with the First Nations and the competent authorities. According to the advice received from the expert federal authorities, the	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		discharge of effluent into the tributary should not have any impact on the flow of the Sabourin River.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT had questions about the dust generated by activities on the mine site and transport activities that could be deposited on surface water such as lakes and rivers. This dust could potentially upset the physico-chemical balance of water bodies, particularly turbidity and transparency. Some fish or plant species need a certain level of water transparency and could be replaced by other species more tolerant of lower levels of transparency. CREAT recommends conducting physico-chemical analyses of the water bodies near the site. This monitoring could be combined with other mitigation measures aimed at reducing dust emissions.	In addition to the conditions requiring the proponent to mitigate the dust emissions generated by the project, the Agency has proposed condition 5.4.1, which will require the proponent to monitor, during construction and operation, air quality for total particulate matter, various metals and dustfall at sites located upwind and downwind of the active mining area and at a control site not expected to be influenced by activities of the designated project and not influenced by the prevailing winds, using as benchmarks the standards and criteria set out in the Canadian Council of Ministers of the Environment's *Canadian Ambient Air Quality Standards* and the Quebec government's *Clean Air Regulation*.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Rouyn-Noranda Chamber of Commerce and Industry	The Rouyn-Noranda Chamber of Commerce and Industry stressed that the proponent needs to demonstrate great vigilance in the management and treatment of water during the mine construction and operation periods and during the closure and follow-up phases. The organization mentioned that it is important not to place more pressure on the water quality of the Bourlamaque River.	The proponent must ensure that the water quality of the treated effluent meets the standards of the *Metal Mining Effluent Regulations* and the criteria in Quebec's Directive 019 before being discharged into the receiving environment. For the mine closure and rehabilitation phase, the requirements are regulated by the provincial government, and Directive 019 on the mining industry describes, among other things, the parameters that must be analyzed, the minimum monitoring frequencies and the duration of monitoring of the final effluent.	No changes required.	No changes required.
Agnico Eagle	In response to condition 3.1.1 proposed by the Agency, the proponent pointed out that, although it will maintain a 60-metre buffer strip between the southern edge of the storage areas and the tributary of the Sabourin River, as required in section 2.9.2 of Directive 019, maintaining a 60-metre vegetated strip will not be possible. The proponent proposes to reserve a 15-metre vegetated strip on either side of all watercourses,	The Agency modified condition 3.1.1. by requiring the proponent to comply with a 15-metre vegetated strip.	Sections 6.1.2, 6.1.4, 6.4.2, 6.5.2 and Appendix G of the report were modified to take this change in the width of the vegetated strip into account.	Condition 3.1.1 was modified.

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	as stipulated in the Quebec *Protection Policy for Lakeshores, Riverbanks, Littoral Zones and Floodplains*.			
Agnico Eagle	In response to condition 3.8 proposed by the Agency, the proponent pointed out that the conceptual compensation plan for the loss of wetlands, developed in conjunction with the Quebec Department of Sustainable Development, Environment and the Fight Against Climate Change, calls for the creation of a system of marshes and peat bogs at the location of the ponds and ore dumps.	According to the advice received from the expert federal authorities, the proponent's analysis concerning the potential environmental effects of the project on wetlands and on their functions is appropriate. The advice of the expert federal authorities took into account the implementation of a wetland compensation plan.	No changes required.	No changes required.
Agnico Eagle	In response to condition 3.10 proposed by the Agency, the proponent pointed out that a monitoring program involving the geochemical characterization of the mined materials in order to protect surface water and groundwater quality would not produce results owing to the short planned period of operation, i.e. four years. The proponent states that it will conduct monitoring of carbon and sulfur levels in the waste rock to ensure optimal segregation of the materials and that it is studying the option of returning waste rock with acid-generating potential (AGP) to the pit. In addition, all the water at the site will be collected, pumped to the mine water retention	As mentioned in section 6.1.3 of the environmental assessment report, Environment and Climate Change Canada (ECCC) remains concerned about the geochemical characterization study in terms of the representativeness of the samples tested and their number. To address this uncertainty, ECCC is of the view that the proponent must continue the characterization of mined materials and conduct geochemical testing on a larger	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	pond and treated if necessary.	scale in the field during the operation phase in order to confirm, in particular, the results obtained, or as appropriate, to implement suitable management measures.		
Société de l'eau souterraine Abitibi–Témiscamingue (SESAT)	SESAT had concerns about the fact that, since the publication of the proponent's environmental impact statement, the system for managing the contact water of the mine site and the groundwater capture system have been significantly modified. According to the most recent information provided by the proponent concerning the water balance, these changes will result in an increase in runoff and exfiltration flows from storage areas and drained surfaces on the project site, which will increase the flow of water to the treatment plant, the polishing pond and the final effluent. SESAT is concerned by the fact that the capacity of the polishing pond has not been modified accordingly.	The construction and operation of the various project components relating to water management will require authorizations under section 22 of the Quebec *Environment Quality Act*. It should also be noted that, in the event that water volumes are higher than anticipated, it is possible that the volume of mining effluent discharged into the receiving environment will be higher. Nonetheless, all the mining effluent discharged into the receiving environment must comply with the requirements of the *Metal Mining Effluent Regulations* and of Directive 019 on the mining industry.	No changes required.	No changes required.
Société de l'eau souterraine Abitibi–Témiscamingue	SESAT had concerns about the fact that, since the publication of the proponent's environmental impact statement, the volume of water channelled into the pit in the closure phase has been	As mentioned in the environmental assessment report, the proponent indicated that additional studies are	No changes required.	No changes required.

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(SESAT)	increased. This change could have the effect of modifying the pit flooding time, but this time has not been recalculated by the proponent. SESAT had questions about the reasons why the proponent did not consider this potentially faster pit flooding time. This change could favour the option of returning part of the waste rock to the pit during restoration of the site.	underway to validate, among other things, the methodology for filling the pit. Depending on the results of these studies, the final choice of the alternative for containment of the waste rock following closure of the mine could be changed. The proponent has agreed with the Quebec Department of Energy and Natural Resources to update the restoration plan in two or three years, which will take into account the results of the additional studies. It should be noted that the closure and rehabilitation of the mine are regulated by the provincial government.		
Kitcisakik First Nation	The Kitcisakik First Nation had questions about the type of compensation (financial or physical) which the proponent will be required to provide to compensate for the loss of wetlands. New rules have come into effect with the adoption of the new Quebec *Act respecting the conservation of wetlands and bodies of water*. The Kitcisakik First Nation is opposed to financial compensation.	The Agency will inform the MDDELCC of the First Nation's questions. The Agency will make inquiries to the proponent concerning the requirements imposed by the Quebec government and will pass on the information to	No changes required.	No changes required.

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		the First Nation.		
Migratory birds [subparagraph 5(1)(a)(iii) of CEAA 2012]				
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT pointed out that section 6.2.2 of the environmental assessment report states that "*No comments were received from the general public on migratory birds and birds at risk*" while CREAT had made the following recommendation concerning birds in its brief submitted to the Agency in October 2015: "CREAT recommends avoiding the breeding periods of special-status species (Table 6-44) and the species of interest surveyed (p. 6-112 of Volume 1) during tree cutting work (in relation to FNV2)."	The Agency revised the section of the report in order to add this comment. This recommendation is covered through condition 4.1, which requires that the proponent take into account Environment and Climate Change Canada's *Avoidance Guidelines*, which state that the proponent must avoid engaging in potentially destructive or disruptive activities during sensitive periods and at sensitive locations in order to reduce the risk of adverse effects on birds, their nests and eggs.	Section 6.2.2 of the report was modified to take CREAT's comment into account.	No changes required.

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Transboundary environmental effects [subparagraph 5(1)(c)(i) of the Act]				
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	**CREAT would like to point out the discrepancy between the figures on carbon dioxide equivalent emissions in the reports of the Agency and of the Bureau d'audiences publiques sur l'environnement (BAPE): "Annually, the Project activities would produce on average an emission rate lower than 10,000 tonnes of carbon dioxide equivalent" (CEAA, 2018, p. 62). "[Translation] The average annual rate of emissions thus totals 11,779 t CO_2 eq (DQ8.1, Appendix 2). It is higher during the first four years, then decreases thereafter (DA17, p. 1)" (BAPE, 2016, p. 93).**	**The proponent revised its calculation of the GHG emissions of the Akasaba West Project in response to questions from the BAPE in February 2017. However, this includes elements that are outside the scope of the federal environmental assessment, such as truck traffic between the Goldex and Laronde mines. The average annual rate of emissions will therefore remain different between the BAPE and Agency reports. However, the Agency has asked the proponent to provide an update on the emission levels. According to the Proponent, greenhouse gas emissions attributable to all phases of the Project are estimated at a total of 63,031 tonnes of carbon dioxide equivalent over six years, including 40,457 tonnes of carbon dioxide equivalent for mining activities and 22,574 tonnes of carbon dioxide**	**Section 6.3 of the report was modified to take into account the revised emission levels submitted by the proponent.**	**No changes required.**

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		equivalent for transportation activities. Annually, the Project activities would produce on average an emission rate of approximately 12,600 tonnes of carbon dioxide equivalent.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	A measure should be added to take the transportation of workers into account: institute a shuttle service between the mine site and the town of Val d'Or for workers and incentives to promote public transit.	The transport of workers between Val d'Or and the mine site is outside the scope of the environmental assessment. The suggestion concerns the proponent and has been passed on to the proponent.	No changes required.	No changes required.
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	In section 6.3.3 - Points of view expressed, the statement that the public did not make any comments is not correct. CREAT submitted comments. It was proposed that the transport of sulphur concentrate between Goldex and La Ronde be taken into account in the assessment of the environmental impacts, particularly the impacts related to truck traffic, GHG emissions, additional safety measures required, etc. (Recommendation 14). In addition, in its Recommendation 7, CREAT suggested instituting a shuttle service between the mine site and the town of Val-d'Or. This would make it possible to take travel by workers into account in determining the project's emissions balance.	The Agency revised the section of the report in order to make the proposed changes.	Section 6.3.3 of the report was amended to take CREAT's comment into account.	No changes required.

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Species at risk protected by the federal act – [Effects identified under subsection 79(2) of the *Species at Risk Act*]				
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT requests that the Agency add the following text to the last paragraph of section 5.1 of the environmental assessment report: "The WSP environmental impact statement indicated that caribou have not been present in the area since the 1990s and are not likely to be present in the future. However, according to document PR5-4 (p. 3),[31] caribou do in fact use the mine project area. In fact, seven individuals are reported to have used the area between 2001 and 2016."	The Agency takes note of CREAT's comment on this point, but points out that this information is mentioned in section 6.4.1 of the environmental assessment report, in the part describing the baseline conditions for woodland caribou.	No changes required.	No changes required.
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT emphasized that if the project receives authorizations from the provincial and federal governments, it would be appropriate to institute monitoring measures in order to evaluate whether the conditions required by the Agency and the proponent's commitments will be sufficient to permit the recovery of a declining, isolated population that is close to extinction. This would make it possible to scientifically document the maintenance or recovery of this population, with the hope of saving other herds, and to avoid repeating the errors of the past and determine a success rate.	The Agency proposed conditions 6.8.6 and 6.9, which require the proponent to implement a monitoring program to assess the effectiveness of the mitigation measures included in the compensation plan for woodland caribou, throughout the implementation of the compensation plan and for at least 15 years following the end of implementation of the plan. On the basis of the monitoring	No changes required.	No changes required.

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[31] http://www.bape.gouv.qc.ca/sections/mandats/Mine_Akasaba_ValdOr/documents/PR5.4.pdf

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	When there are delays in efforts to promote the recovery of a population and establish a protected area, it is important that the competent authorities recognize this and that they make a serious and effective commitment to the other populations at risk, such as the Gaspé population in Quebec. In the case of the Val-d'Or herd, the species recovery efforts and the establishment of a protected area were instituted too late. In addition, CREAT would like to know what the Agency thinks of the preliminary report published in March 2018 by the Quebec Department of Forests, Wildlife and Parks (MFFP) which abandons all hope for this herd and proposes discontinuing all habitat restoration measures.	results, modified or additional mitigation measures could be required. The proponent must submit reports of this monitoring program to the competent authorities. The Agency passed on CREAT's comments to the competent authorities. Following the MFFP report of March 2018, the competent provincial and federal authorities are continuing their discussions concerning the woodland caribou, including the status of the Val d'Or herd.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	During the recent consultation organized by the Quebec Department of Forests, Wildlife and Parks (MFFP) on forest planning, CREAT noted that despite the planned closure of several sections of logging roads around the periphery of the Caribous-de-Val-d'Or Biodiversity Reserve, several work projects were planned, including the improvement of a logging road that passes through this protected area. This logging road provides access to several harvesting sites located outside the protected area. In addition, various kinds of work are planned between this protected	Forest planning as well as management of the biodiversity reserves are under provincial jurisdiction.	No changes required.	No changes required.

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	area and the planned Piché-Lemoine River Biodiversity Reserve, thereby impacting the connectivity between these two protected areas.			
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT called attention to a passage of the environmental assessment report which mentions (section 6.4.1): *"Due to the various follow-ups that the Proponent may have to carry out once the mining operation is completed ... the Proponent may be unable to close and reforest as quickly as it suggests."* CREAT pointed out that this additional timeframe must be taken into account in the assessment of the project's impacts on woodland caribou since this delay will not facilitate the return of the caribou.	This timeframe to restore the caribou habitat was taken into account in the analysis of Environment and Climate Change Canada (ECCC) on the impacts of the project on woodland caribou. The Agency took ECCC's final opinion into account in drawing the conclusions that are presented in the environmental assessment report concerning the effects of the project on woodland caribou.	No changes required.	No changes required.
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT pointed out that, in section 6.4.1 of the environmental assessment report, in the paragraph discussing the comments received from the public, a recommendation that had been made by CREAT in its brief submitted to the Agency in October 2015 was not included. The recommendation asked the proponent to remedy the net loss of 53 hectares of terrestrial environments and 64 hectares of wetlands, particularly the peat bogs and adjacent stands.	The Agency revised the section of the report in order to add this comment.	Section 6.4.1 of the report was modified to take CREAT's comment into account.	No changes required.

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Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT is in agreement with the Agency's analysis and conclusions concerning the project's effects on woodland caribou.	Based on the opinion of Environment and Climate Change Canada, the information provided by the proponent as well as the comments of the Lac Simon and Kitcisakik First Nations, the Agency determined that the project could result in adverse effects on the boreal caribou population, more specifically the Val-d'Or herd, and its critical habitat, range QC1.	No changes required.	No changes required.
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT mentioned that, in the brief submitted to the Bureau d'audiences publiques sur l'environnement (BAPE) in the context of this project, CREAT pointed out that there was no exhaustive analysis of the collateral effects of the project on the Val-d'Or caribou herd. In this brief, CREAT recommended including the construction and use of the logging road (the impacts of which were not assessed), as well as the increase in the use of the area by various users who will benefit from the construction of new trails and roads (snowmobiles, quads, hunters, fishermen, etc.).	The direct effects related to the construction and use of the logging roads were not included in the scope of the project since they are not under the proponent's control. However, the effects of the development of the territory on the Val-d'Or caribou herd were taken into account in the Agency's analysis in the context of the assessment of the cumulative effects on the current use of lands and resources for traditional	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		purposes, which concluded that the project would have significant cumulative adverse effects on this component.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT questioned why the Agency did not choose the woodland caribou for the analysis of cumulative environmental effects, even though the Lac Simon First Nation and the Algonquin Nation of Kitcisakik are very concerned about the effects of the project on this component.	Under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), the assessment of the cumulative effects deals with the components of the environment that are within the legislative authority of Parliament (section 5(1)) on which there are residual effects. The woodland caribou is not a component listed in section 5(1). However, since the woodland caribou constitutes a subsistence species and is of cultural and spiritual importance for the First Nations consulted in this project, the woodland caribou is taken into account in the assessment of the cumulative effects on the component of the current use of lands and resources for traditional purposes, listed in section 5(1).	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
La Vallée de l'Or RCM Agnico Eagle QMX Gold Corporation Probe Metals Inc. Globex Mining Enterprises Inc.	The regional county municipality of La Vallée de l'Or mentioned that range QC1 established by Environment and Climate Change Canada (ECCC) does not correspond to the actual distribution of the caribou. The recovery plan of the Quebec Department of Forests, Wildlife and Parks (MFFP) demonstrates that caribou are present mainly on the territory of the Caribous-de-Val-d'Or Biodiversity Reserve and to some degree in the surrounding area. The proponent also considers that the boundaries of range QC1 do not appear to be accurate in relation to the actual use of the area by the caribou illustrated in Figure 13 of the environmental assessment report. The satellite and telemetry monitoring illustrated in Figure 13 indicates a concentration of location points within the caribou wildlife site to the south of Val-d'Or. The proponent has asked ECCC to review the boundaries of range QC1. Without this review, which would take into consideration the actual use of the area by the caribou, the socioeconomic development of the region could be compromised. QMX Gold Corporation, Probe Metals Inc. and Globex Mining Enterprises Inc. questioned the discrepancy between the caribou ranges as determined by the provincial and federal governments. The area delimited by Quebec is	The determination of the range of the boreal caribou in Canada is based on data provided to Environment and Climate Change Canada (ECCC) by the provincial and territorial governments. The data concerning range QC1 were provided to ECCC by the Quebec government in 2008. These data were used for the purposes of the Recovery Strategy for the Woodland Caribou, Boreal population, in Canada (2012). ECCC can update the range boundaries and the information on the self-sustaining status of all the local populations, based on new or more accurate data provided by the provinces and territories. ECCC has not received new data or a request from the Quebec government to update the range boundaries of the boreal caribou in Quebec.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	supported by satellite and telemetry data. In the case of the federal area, it appears that sectors where caribou have been observed on numerous occasions are not included, while others, where observations are almost non-existent, are included.			
QMX Gold Corporation, Knick Exploration, Monarques Gold, La Vallée de l'Or RCM, Mining Association of Canada, Canadian Malartic, Wesdome's Kiena complex, Rouyn-Noranda Chamber of Commerce and Industry, Québec Mining Association, Agnico Eagle, Corporation de développement industriel de Val-d'Or, Association de l'exploration minière du Québec, Globex Inc., Probe	It is noted that the proponent proposed to recreate an area of habitat four times larger than the amount of disturbed habitat, namely 0.24% of the area of range QC1, whereas the area disturbed is 0.06%. The proponent has demonstrated a willingness to minimize the impacts of the project on Val d'Or caribou and to work with stakeholders. The mitigation measures and compensation plan that would be implemented by the proponent would be beneficial to the environment by reducing the rate of disturbance and would promote the survival and recovery of woodland caribou. The regional county municipality of La Vallée de l'Or welcomes the proponent's proposal for the closure and reforestation of former forest roads, which will restrict the movements of wolves, a major predator. The RCM considers the impacts of the project on caribou survival to be very minimal given the compensation plan. It is noted that the Lac Simon First Nation	The Agency agrees that the caribou habitat compensation project proposed by the proponent is essential to reducing the effects of the project on caribou and its critical habitat. The Agency is of the view that a residual effect persists despite the compensation plan and mitigation measures, and that this effect could be detrimental to the survival and recovery of the Val-d'Or caribou population due to the precarious state of the herd.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Metals Inc.	supported the compensation plan. Knick Exploration noted that the Government of Quebec, Action boréal and local stakeholders are already doing their best to implement effective measures to ensure the survival and recovery of Val-d'Or caribou.			
Agnico Eagle Rouyn-Noranda Chamber of Commerce and Industry	The proponent states that a preliminary report released in March 2018 by the Quebec Department of Forests, Wildlife and Parks (MFFP) indicates that the position of the Quebec government is that despite the implementation of significant restoration measures, there is no guarantee that the Val-d'Or caribou herd will recover. According to the proponent, the threshold of 65% undisturbed habitat is unrealistic in range QC1 since it used and occupied by many people and also includes the city of Val-d'Or. The Rouyn-Noranda Chamber of Commerce and Industry adds that forestry and mining activities are also carried out in the sector. It also notes that the Government of Quebec authorized the forestry company EACOM to build a road even closer to the protected areas as the impacts on caribou were considered to be minor.	The Agency has read the preliminary report diagnosing the area of habitat in disturbed landscapes in Val-d'Or. There are no definitive conclusions regarding the remediation of the area of residual habitat in Val-d'Or. Rather, the report states that the analysis results do not appear to be very encouraging in a context where efforts that will be made at the provincial level in the coming years will have to maximize the chances of success of the recovery and maintenance of woodland caribou in Quebec.	No changes required.	No changes required.
Agnico Eagle	The proponent indicates that the compensation plan was designed such as to address the concerns	The Agency agrees that the caribou habitat compensation	No changes	No changes

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	of Environment and Climate Change Canada (ECCC) on cumulative effects. The plan was submitted and improved upon on two occasions at ECCC's request and provides for a compensation ratio (4:1) that exceeds the losses that would be caused by the project. The plan would be carried out in a sector more heavily used by caribou and would reduce disturbance by 0.24%, which would increase the chances of caribou recovery. The proponent also provided the following additional information on the compensation plan: • The plan represents an overall addition of 0.18% caribou habitat. • The proponent will fund two research projects by the Université du Québec en Abitibi-Témiscamingue to document the effectiveness of the plan. • The proponent received a letter from the Quebec Department of Forests, Wildlife and Parks in December 2017 supporting the plan. • The proponent received a letter of support from the Lac Simon First Nation on the plan in February 2018. • The proponent intends to begin closing forest roads as early as the summer of 2018 if it obtains the necessary authorizations. • In the event of a favourable decision on the project by the two levels of government, the	project proposed by the proponent is essential to reducing the effects of the project on caribou and its critical habitat. The Agency believes that a residual effect persists despite the compensation project and mitigation measures, and that this effect could be detrimental to the survival and recovery of the Val-d'Or caribou population due to the precarious state of the herd.	required.	required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	proponent will implement its caribou compensation plan regardless of the provincial government's position on the recovery of the Val-d'Or herd.			
Mining Association of Canada (MAC)	MAC considers the Agency's conclusion to be irrelevant. The environmental assessment report states that the project will have little impact on caribou habitat (0.06%) and that the proponent is proposing a compensation plan that will provide fourfold compensation for losses caused by the project. Despite that, the Agency concludes that the project is likely to cause significant adverse cumulative effects on the current use of lands and resources by Aboriginal peoples, owing primarily to the fact that the woodland caribou compensation project will not result in the restoration of functional habitat for woodland caribou immediately and in the short term.	The Agency is of the view that the project's footprint would be less than 100 hectares during the operation phase and approximately 40 hectares post-closure. However, the project would contribute to the disturbance of the First Nations' ancestral territory, access and use of which have significantly declined over the last 50 years.	No changes required.	No changes required.
Québec Mining Association (QMA)	QMA points out that the proponent contributed to a program to protect and safeguard the Val-d'Or woodland caribou population with the Quebec government. With the proponent's contribution, the government was able to pursue the activities initiated in 2013 to maintain and increase the caribou population, which had been in decline since 1990 in a sector already disturbed by the proximity of the municipality and other activities in	The Agency has taken note of this comment.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	the area.			
Probe Metals Inc, Agnico-Eagle, Canadian Malartic, Globex Inc., Association pour l'exploration minière du Québec, Rouyn-Noranda Chamber of Commerce and Industry, Québec Mining Association	It is noted that the disturbance rate in range QC1 is already 65% owing to various past and present activities in the area (forestry, mining, residential, commercial, roads, recreational). Probe Metals Inc. notes that only the Quebec government can have a significant effect on the rate of cumulative disturbance in range QC1 and that it has just announced that it will not go ahead with habitat rehabilitation.	Under the federal Recovery Strategy for Woodland Caribou, Boreal population, in Canada, the project is located in range QC1, recognized as being the range of the Val-d'Or herd. The entirety of range QC1 is identified as critical habitat. The Agency considered the fact that the disturbance rate in range QC1 is estimated at 65%. The Agency has read the preliminary report diagnosing the area of habitat in disturbed landscapes in Val-d'Or. There are no definitive conclusions regarding the remediation of the area of residual habitat in Val-d'Or. Rather, the report states that the analysis results do not appear to be very encouraging in a context where efforts that will be made at the provincial level in the coming years will have to maximize the chances of success of the recovery and maintenance of woodland	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		caribou in Quebec.		
Kitcisakik First Nation	Urgent, concrete legislative protection measures are required to put an end to the destruction of caribou habitat, which must become a protected area; this involves suspending the issuance of mining and forestry permits, dismantling hunting camps, and closing roads, ATV trails and vacation homes. If economic development is required, it must be carried out elsewhere than in Val-d'Or caribou habitat. According to the Kitcisakik First Nation, the proponent's compensation project for Val-d'Or caribou would have minimal impact since its habitat continues to be exploited and destroyed. Given that the species is seriously threatened, what is required is official recognition, political will at the provincial and federal levels, the imposition of legal measures to protect caribou habitat and to prohibit all activity in caribou habitat, and habitat restoration activities. There is a sense of powerlessness in the face of the imminent loss of the Val-d'Or caribou. If the species is truly destined to become extirpated, it must absolutely be able to do so with dignity as the result of natural laws governing the status of populations (e.g., predation), rather than for purely economic reasons.	Proposed conditions 6.3 to 6.12 include an obligation on the proponent to develop and implement measures to mitigate the effects of the project on caribou The proponent developed a compensation plan in collaboration of Environment and Climate Change Canada and the Quebec Department of Wildlife, Forests and Parks, aimed at restoring Val d'Or caribou habitat disturbed by the project. The Agency considers that the compensation plan will enable habitat restoration.	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Kitcisakik First Nation	Kitcisakik First Nation has asked the federal government to provide a written response on what it will do to properly protect the Val-d'Or caribou herd.	Environment and Climate Change Canada has proposed a meeting to explain the measures that can be taken and will send out an invitation message. The Kitcisakik First Nation is satisfied with that proposal.	No changes required.	No changes required.
Lac Simon First Nation	The caribou habitat compensation plan proposed by the proponent is considered satisfactory. However, the Lac Simon First Nation must obtain a commitment from the Quebec government's regarding the protection of the proponent's compensation project for future years. Otherwise, compensation is pointless. Federal and provincial legislative measures to protect caribou habitat must be implemented in conjunction with the compensation project.	The Agency recognizes that the Quebec government has an important role to play in the management of the territory and the protection of caribou. Discussions took place between ECCC and the Government of Quebec to reach an agreement for the implementation of the compensation plan for the recovery of the Val-d'Or herd. Environment and Climate Change Canada has proposed a meeting to explain the existing legislation, the obligation to work with the Quebec government, the available funding programs and the concrete measures that could	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		be adopted to protect caribou habitat.		
Lac Simon First Nation	**Questions about the feasibility of implementing the proposed mitigation measures. Raising awareness among workers/truck operators, for example, to slow down on roads in order to avoid collisions with caribou and to report their observations looks good in theory, but in practice, it is unclear whether it will benefit caribou protection efforts. The tracking of caribou with collars would likely be more effective.**	**The Agency has developed technically feasible conditions that require that the proponent conduct follow-ups and communicate specific information to the First Nations. Specifically, the Agency has proposed conditions requiring the proponent:** • **To develop, prior to construction, and implement, during all project phases, a communication protocol to inform employees and contractors of the designated project, including operators of ore haul trucks, of the presence of caribou. If the proponent observes or is informed of the presence of caribou, it will develop and implement measures to mitigate the adverse environmental effects of the designated project on the caribou caused by the risk of collisions, specifically by**	**No changes required.**	**No changes required.**

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		modifying the frequency, schedule and terms and conditions of ore hauling activities. - To notify the Quebec Department of Forests, Wildlife and Parks of all collisions between vehicles associated with the designated project and caribou as soon as practicable, to inform First Nations in writing and to develop and implement additional mitigation measures to avoid future collisions. - To develop, prior to the start of construction, in consultation with First Nations and relevant authorities and to the satisfaction of Environment and Climate Change Canada, a caribou habitat compensation plan. The proponent will implement the compensation plan at the start of the construction phase. Environment and Climate Change Canada specifies that		

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		the existing technology does not allow for real-time tracking of caribou using radio collars.		
Lac Simon First Nation	The Lac Simon First Nation understands the potential effects set out in the report, particularly as they relate to the cumulative effects on caribou, but nonetheless feels that it would be to its advantage to tolerate the presence of the project on its territory, with its drawbacks, in return for the caribou compensation plan and IBA-type agreement guaranteeing benefits for the First Nation.	The Agency has been informed by the Lac Simon Natural Resources Department that negotiations have begun between the Lac Simon First Nation and the proponent for the establishment of an impact and benefits agreement that would guarantee benefits for the Lac Simon First Nation. The Agency recognizes the importance of the impact benefit agreement as a means to compensate for the possible adverse impacts on section 35 rights. Although an impact and benefits agreement cannot be required as part of the EA, the Agency forwarded the comments of the Lac Simon First Nation to the proponent. Moreover, the Agency understands that the implementation of an impact benefit agreement could	No changes required.	No changes required.

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		constitute accommodation.		
Species at risk (turtles and bats)				
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	MFFP requested the public's help in identifying turtle occurrences in the region. CREAT asks whether the data was cross-referenced with the study area and recommended that new reports of turtles gathered by MFFP be taken into consideration.	According to the advice received from the expert federal authorities, the project would not have effects on these species since they do not appear to be present in the study area. Nonetheless, measures have been provided for in the event that these species are present in order to limit the potential effects on them. The proponent would maintain a 15-metre vegetative buffer along the stream to protect the riparian habitat of turtles. In addition, forest clearing would be avoided during the nesting season to prevent mortality of wood turtles that may occur in terrestrial environments at the mine site.	No changes required.	No changes required.
Conseil régional de l'environnement de	It is recommended that workers at the Akasaba West project be made aware of any species with	According to the advice received from expert federal	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
l'Abitibi-Témiscamingue (CREAT)	designated status that may be present in the extended study area and that they be informed about the measures to be taken in the event of sighting such species.	authorities, the project would have no effects on these species since they do not appear to be present in the study area. The Agency has determined that no additional mitigation measures or monitoring or follow-up program are necessary.		
Aboriginal peoples – Current use of land and resources [subparagraph 5(1)(c)(iii) of CEAA 2012]				
Agnico Eagle, Corporation de développement industriel de Val-d'Or, Association de l'exploration minière du Québec, Rouyn-Noranda Chamber of Commerce and Industry, Wesdome, La Vallée de l'Or RCM	Agnico Eagle observed, through its consultation process with the Algonquin communities of Lac Simon and Kitcisakik, that the restricted study area is not heavily used by Algonquin communities. It was noted that the communities had stopped carrying out traditional activities within the territory in recent decades and that the project did not interfere with such activities. The communities had not engaged in woodland caribou hunting for several years, and the area is not extensively used by Aboriginal hunters.	The First Nations have confirmed that they no longer use the restricted study area because of disturbances associated with past mining activities and that they have doubts about the quality of country food found in the area. The project could contribute to the permanent abandonment of the site and its zone of influence. Moreover, the Agency is of the view that because the project footprint is less than 100 hectares during the operation phase and approximately 40 hectares post-closure, access to the territory would only be compromised for	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		a small area of traditional territory. The Agency took into account the fact that caribou is a subsistence species and a species of cultural and spiritual importance for the Lac Simon and Kitcisakik First Nations as well as their desire to resume caribou hunting if the Val-d'Or herd recovers.		
Mining Association of Canada (MAC)	MAC supports sustainable development and the objectives of the Woodland caribou recovery strategy and recognizes the effects of historical disturbance of the territory on the First Nations' traditional activities. However, rejecting or delaying the project would not contribute to improving these aspects. It would not reduce risks to caribou and there could even be increased risks if the compensation plan were not implemented.	The Agency is preparing an environmental assessment report that will be presented to the Minister. If a proposed project is likely to cause significant adverse environmental effects, the Minister must refer it to the Governor in Council (Cabinet) for a determination of whether the environmental effects are justified in the circumstances.	No changes required.	No changes required.
Canadian Malartic, Globex Inc., Association de l'exploration minière du Québec,	It is stated that the project occupies a limited area within the territory (no tailings site or mill) and that it encroaches on only a very small part (0.06%) of federally protected Val-d'Or range	The Agency estimates that the project's footprint would be less than 100 hectares during the operation phase and approximately 40 hectares post-	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
Corporation de développement industriel de Val-d'Or, Rouyn-Noranda Chamber of Commerce and Industry, Probe Metals Inc., Québec Mining Association, QMX Gold Corporation, Mining Association of Canada, Val-d'Or Chamber of Commerce, Monarques Gold, La Vallée de l'Or RCM, Probe Metals Inc.	(QC1). It is stated that the project would have little impact particularly on wildlife species such as caribou, which could be hunted.	closure. However, despite the proposed measures, the Agency feels that the project could compromise the achievement of the objective of 65% undisturbed habitat for woodland habitat in range QC1 and would cause harmful effects on caribou (disturbance and risk of mortality).		
Kitcisakik First Nation	Not only has Algonquin territory been disturbed, but it has also been destroyed by successive development projects (forestry, mining, etc.). The project areas, even though it is not currently used by members of the Kitcisakik First Nation, should be protected for future generations. The Algonquin territory is not increasing despite the growing needs of the growing Algonquin population.	The Agency notes that the study area is already heavily disturbed by cumulative resource development activities, including transportation infrastructure and non-Aboriginal use. These past disturbances have modified the sectors used by the Algonquin	The Agency modified sections 6.5.3, 6.5.4 and 7.3.7 of the environmental assessment report to reflect the fact that caribou hunting would not be	No changes required.

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	Contrary to what is stated in the Agency's report, should the caribou population recover following the legislative measures implemented, the Kitcisakik First Nation, which stopped hunting caribou several decades ago, does not intend to starting hunting caribou again given that moose have become established on its territory and is now part of the Algonquin diet. The federal government has failed in its obligation to protect caribou and has left it up to the province, which is not doing its job. The Kitcisakik First Nation has noticed the decline in porcupine and fisher populations. Raccoons, coyotes and turkey vultures now occur in the area as a result of deforestation.	people and their activities. In its environmental assessment, the Agency was careful to assess the effects of the project on the potential rights of the Kitcisakik and Lac Simon First Nations on the territory subject to claims by the Algonquin First Nations. The Agency proposed conditions that will address the concerns about fish and fish habitat, migratory birds and at-risk bird species, social and health conditions, and the current use of the territory for traditional purposes. These measures will also mitigate the potential effects of the project on the use of the Nitakinan, the Algonquins' asserted traditional territory.	resumed by the Kitcisakik First Nation since moose has been integrated into their diet.	
Lac Simon First Nation	The project would have significant adverse effects on the current use of the territory by members of the First Nation. They will avoid the mine sector, even though the project covers only a small area and even though contamination analyses have	The Agency concluded that, in light of the mitigation measures, the project would result in significant adverse cumulative effects on the	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	been conducted, because they have a negative perception and doubts about the project. The distinction made by the Agency between the effects of the project taken in isolation and the cumulative effects on the current use of the territory is difficult to understand, but the cumulative effects are significant. Clarification that the compensation project that would be implemented to provide compensation for caribou habitat was not examined with the objective of providing compensation for encroachment on the territory used for traditional activities. In implementing this project, priority must be given to caribou.	current use of lands and resources for traditional purposes. Nonetheless, the Agency developed conditions that would be applicable if the project were to go forward aimed at implementing programs to monitor air quality and vegetation likely to be consumed for medicinal or sustenance purposes. If significant adverse effects were considered to be justified by the Governor in Council, additional measures and conditions will have to be established.		
Aboriginal peoples – Health and socioeconomic conditions [subparagraph 5(1)(c)(i) of the Act]				
Agnico Eagle, Knick Exploration, Probe Metals Inc., Corporation de développement industriel de Val-d'Or	It is stated that the positive and beneficial socioeconomic impacts on communities of implementing the project will be greater than the cumulative adverse effect of the project on the use of land and resources by Aboriginal peoples.	Under the *Canadian Environmental Assessment Act, 2012*, the Agency is required to assess the significance of the environmental effects of the project, including the environmental effects of malfunctions or accidents that	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. The Minister of Environment and Climate Change must make a decision as to whether the designated project is likely to cause significant adverse environmental effects referred to in subsection 5(1) of the *Canadian Environmental Assessment Act, 2012*. The potential positive socioeconomic impacts of a project are not among the considerations taken into account by the Minister in her decision.		
Rouyn-Noranda Chamber of Commerce and Industry	The Chamber of Commerce is reassured to see that the crusher will be installed under a dome to limit the impact of dust emissions and noise levels on the residences closest to the pit. Regular monitoring should be carried out to prevent exceedance of the standards respecting	The Agency received additional information from the proponent regarding the type of shelter (partially closed shelter), and the text of the report was modified accordingly.	Section 2.2: "MegaDome type shelter" was replaced with "partially enclosed shelter"	Condition 5.3.2 has been modified. The wording "in a covered, closed

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	noise levels and dust emissions.	In the assessment of environmental effects, the Agency took into consideration the fact that the crusher would be installed under a partially closed shelter to protect it from inclement weather, to control dust emissions and to reduce noise levels. The crusher will also be equipped with a dust collection or dust suppression system. The proponent has committed to integrate a dust management plan to limit dust emissions beyond the mine site. The proponent has also committed to conduct regular monitoring of ambient noise during the construction and operation of the project and to carry out monitoring of contaminants, including metals, in dust, to determine whether atmospheric metal concentrations are increasing significantly during operation of the project.	Section 6.6.2 and Appendix H: "shelter" has been replaced with "partially enclosed shelter" Appendix G: "dome" has been replaced with "partially enclosed shelter"	location" has been replaced with "in a partially enclosed shelter."

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		The Agency is recommending a number of enforceable conditions to the Minister respecting noise and dust that should be imposed on the proponent if the project is authorized. The proponent must develop a protocol for receiving complaints related to exposure to noise from the designated project and must implement corrective measures to reduce exposure to noise on a timely basis. **The proponent must implement measures to mitigate the frequency and intensity of noise from the designated project.** **The proponent must develop measures to mitigate emissions of fugitive dust from the designated project.** **The proponent must develop a program to monitor the effects of air quality on First Nations' health, including the monitoring of air quality during the**		

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		construction and operation phases to measure total suspended particulates and metals at several sites and to compare the results against provincial and federal standards and criteria; and the implementation of modified or additional mitigation measures if the monitoring results demonstrate exceedances of the standards and criteria.		
Kitcisakik First Nation	The Kitcisakik First Nation does not agree with the Agency's conclusion that the project will have little effect on Aboriginal peoples' health conditions and maintains that, although Algonquin villages are located several kilometres from the mine project, there are hunting and trapping camps within the territory in the area adjacent to the proposed mine site. People who use the land, Aboriginal and non-Aboriginal, may therefore be affected by the pollutants generated. The First Nation pointed out that an industrial project can have impacts on human health, even if it is not located near dwellings. For example, the First Nation has noted adverse effects of smoke	The Agency will require that the proponent: • develop, before construction begins and in consultation with First Nations and relevant authorities, follow-up requirements to verify the accuracy of the environmental assessment with respect to the adverse health effects from contamination of foods likely to be eaten by First Nations people or used for medicinal purposes. As part of the follow-up, the proponent will	No changes required.	No changes required.

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
	from the Horne smelter (including deterioration of trees) extending over several kilometres. It also mentioned that there is a high cancer rate in an Algonquin family living quite a distance from the smelter, that more cases of cancer have been identified in villages located within the zone of influence of mining activities (Cadillac Fault) and that the Algonquin no longer eat animal livers because they worried about illness. The Kitcisakik First Nation is satisfied with the proponent's initiative to characterize the metal concentrations in wild blueberries, Labrador tea and white birch leaves and bark, but would have preferred to be consulted about the plant species targeted for the bioaccumulation analysis. It also questioned the choice of birch bark.	monitor the levels of arsenic, chromium, copper, mercury, nickel, lead, cadmium, selenium and zinc in plants, specifically (*Vaccinium* spp.), Labrador tea (*Rhododendron groenlandicum*) and white birch (*Betula papyrifera*), located in areas adjacent to the designated project area and in line with the prevailing winds. If metal concentrations increase, the proponent will be required to conduct a human health risk assessment; • develop, before construction begins and in consultation with the First Nations and relevant authorities, follow-up requirements to verify the accuracy of the environmental assessment and the mitigation measures related to the adverse environmental effects on fish and fish habitat caused by changes in water quality. To ensure that the First Nation is satisfied with the targeted plant species, the Agency		

Source	Comment or Concern	Agency Response	Changes to the Final EA Report	Changes Made to the Proposed Conditions
		proposes that, as part of the potential conditions, the First Nation be consulted in the process of establishing the follow-up program.		
Lac Simon First Nation	Although the Lac Simon First Nation is fairly satisfied with the proponent's initiative to analyze the metal concentrations in wild blueberries, Labrador tea and white birch leaves and bark, it would have preferred to be consulted about the species targeted for the bioaccumulation analysis. It considers that the analysis of bioaccumulation in plants consumed by animals (e.g. beaver, partridge and moose) that are part of the diet of the Lac Simon community would be very relevant.	To ensure that the First Nation is satisfied with the targeted plant species, the Agency proposes that, as part of the potential conditions, the First Nation be consulted in the process of establishing the follow-up program.	No changes required.	No changes required.
Accidents and malfunctions				
Organisme de bassin versant Abitibi Jamésie (OBVAJ)	The watershed organization commends the proponent for considering the risk of accidents and malfunctions in the project design in order to prevent risks and implement emergency response and other measures in the event of accidents. It is mentioned that a potential risk of accidental spills of chemicals still exists (e.g. hydraulic fluid/oil leaks) in the water during construction of the mining complex, the culvert and road linking the site to the route. It is suggested that the proponent adopt a	The Agency is of the opinion that the proponent has adequately identified and assessed potential accidents and malfunctions associated with the project. The Agency will recommend to the Minister several enforceable conditions related to accidents and malfunctions with which the proponent must comply if the project is approved to proceed,	No changes required.	No changes required.

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	voluntary approach to transition toward the use of vegetable oil (e.g. canola oil) for equipment operation. This would make it possible to stop using conventional oils containing hydrocarbons, and would also result in the use of a biodegradable product.	notably: The proponent must take all reasonable measures to prevent accidents and malfunctions that could result in adverse environmental effects. The proponent will develop a contingency/emergency response plan for accidents or malfunctions associated with the designated project. This suggestion concerns the proponent and has been forwarded to same.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	The risk of release of acid rock drainage is not mentioned but this is a risk that could occur during project operations, restoration/rehabilitation and potentially beyond those phases.	Based on the advice received from the expert federal authorities, the measures proposed by the proponent to minimize the risk of accidents and malfunctions are appropriate.	No changes required.	No changes required.
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	The management of accident risks does not consider all stages in the ore extraction cycle, including transport to Goldex, from Goldex to LaRonde, from Goldex to Manitou and from LaRonde to another site. It is requested that the risks related to transportation/traffic be included	Ore transport to the Goldex plant falls under the scope of the environmental assessment. Accidents and malfunctions that are likely to entail environmental effects during	No changes required.	No changes required.

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	in the accidents and malfunctions section, taking into account the Goldex and LaRonde plants, as well as the sites where the mine tailings will be deposited.	this stage in the ore cycle have been evaluated. Based on the advice received from expert federal authorities, the measures presented by the proponent to minimize the risk of accidents or malfunctions are appropriate. The proponent plans to use the Goldex facility for ore processing and the Manitou site for tailings storage. These facilities do not fall within the scope of the environmental assessment of the project, since they are already in operation and have certificates of authorization issued by the Quebec government.		
Environmental assessment methodology				
Mining companies Globex, Wesdome, Knick Exploration, Canadian Malartic, Val d'Or Chamber of Commerce, QMX Gold Corporation, Rouyn-Noranda	These organizations mention that it is difficult to understand the conclusion about significant cumulative effects, given the implementation of mitigation measures and the compensation plan and state that they are concerned about or disagree with it. The organizations request that the Agency revise	The Agency's conclusions are based on the documentation submitted by the proponent, the advice received from federal expert authorities, including Environment and Climate Change Canada, and the traditional knowledge of the	No changes required.	No changes required.

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Chamber of Commerce and Industry, Monarques Gold, Corporation de développement industriel de Val d'Or, Quebec Mineral Exploration Association, Probe Metals Inc., Mining Association of Canada, Québec Mining Association, La Vallée de l'Or RCM	its position and not issue an unfavourable opinion in relation to the project based solely on the cumulative impacts that it could have within a given territory. This could hinder mining development and does not take into consideration the situation of a resource region.	Algonquin First Nations concerning the site that will be impacted by the project and is part of their traditional territory. Although the project's contribution is small, the Agency concluded that the Akasaba West gold and copper mine project is likely to cause significant adverse environmental effects on the current use of lands and resources for traditional purposes by Aboriginal peoples, despite the implementation of mitigation measures, and will make recommendations in this regard to the Minister of Environment and Climate Change. In addition, the Agency concludes that the project is not likely to cause significant adverse environmental effects on the other components of the environment that fall under federal jurisdiction, taking into account the mitigation		

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		measures.		
Québec Mining Association, Rouyn-Noranda Chamber of Commerce and Industry, Quebec Mineral Exploration Association (AEMQ), Corporation de développement industriel de Val-D'Or, Monarques Gold, Agnico Eagle	Various stakeholders consider it unfair that the project has to suffer the consequences of a situation beyond all control and is the result of cumulative impacts from past activities in various sectors, especially since the project was developed in a responsible manner by implementing best practices to reduce its footprint and taking into consideration the concerns of the different users of the land, including riverside populations and First Nations. In spite of all the best practices and mitigation measures implemented by the proponent, the cumulative impacts will persist given the continuation of forestry operations in particular. The issue related to the Val D'Or herd is not limited to a single mining project. Other activities have contributed to the decline of the caribou in recent decades. The proponent shares this view and also refers to a type of injustice. The proponent maintains that it has proposed best practices to reduce the project footprint but nonetheless may not be allowed to carry out the project because of the cumulative effects it could cause. According to the proponent, this is tantamount to imposing a moratorium on activities subject to the federal process in the area	CEAA 2012 aims to protect components of the environment that are within federal legislative authority from significant adverse environmental effects caused by a designated project, including cumulative environmental effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out. The cumulative environmental effects assessment should consider the valued components for which residual environmental effects are expected, in spite of the implementation of mitigation measures, regardless of whether those residual environmental effects are predicted to be significant. The cumulative environmental effects assessment must consider other activities carried out up to the time of the	No changes required.	No changes required.

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	concerned.	analysis, or will be carried out in the future and that will have an effect on the same valued components. Knowledge of the communities and traditional Aboriginal knowledge to which the proponent has access must be included in the cumulative environmental effects assessment.		
Effects of the environment on the project				
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	In 7.2.2 Proponent's assessment of environmental effects, CREAT would like to add a nuance here: [TRANSLATION] "Certain natural disasters, such as landslides, are not considered in the context of the project given the low risk they present in the study area. Indeed, while there is clay in the soil, the relatively flat relief in the area means there is very little likelihood of a landslide occurring. CREAT points out that the slopes of the pit and the PAG and NPAG waste rock piles and storage areas, overburden, etc. do not appear to have been considered in the assessment and it wants to obtain information on natural disasters, such as landslides, in relation to these types of infrastructure in particular.	The Agency considers that the proponent has taken into account the environmental components that could affect the project in the design of the mine site structures, that potential accidents and malfunctions related to these factors are documented and that an appropriate emergency response plan has been proposed. The Agency is of the opinion that significant adverse effects of the environment on the project are unlikely. The expert federal authorities have indicated that the landslide risk in the project	No changes required.	No changes required.

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		area is low. In addition, the Agency has proposed condition 8.3 which requires that the proponent develop a contingency plan in case of accidents or malfunctions related to the designated project.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT asked [Translation] "whether climate change was taken into account in the design of the facilities, particularly with regard to the warming trend (frost depth) and anticipated impacts (e.g. breaks in pipes). In section 9.2, it would also be appropriate to consider the effects of climate change" (CREAT, 2015, p. 26). This comment should be added to section 7.2.3 Views expressed by the public.	The Agency has revised the section of the report concerned to incorporate the proposed changes.	Section 7.2.3 of the report has been modified to take into account the comment made by CREAT.	No changes required.
Cumulative effects				
QMX Gold Corporation, Val D'Or Chamber of Commerce, Globex Mining Enterprises Inc., Canadian Malartic, Wesdome Kiena mine	The importance of the mining sector in the Abitibi-Témiscamingue region is highlighted. Concerns were expressed that the conclusion regarding significant cumulative effects on the current use of land and resources for traditional Aboriginal purposes could create a precedent and that this would have major repercussions on mineral exploration and mining in Abitibi-Témiscamingue	Every project is subject to an independent environmental assessment by the Agency. The approach and level of effort applied to assessing cumulative environmental effects in a project-specific environmental assessment is established on a	No changes required.	No changes required.

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complex, Globex, Knick Exploration, Agnico Eagle, Rouyn-Noranda Chamber of Commerce and Industry, Québec Mining Association, Val D'Or Chamber of Commerce, Monarques Gold	and other mining regions. This calls into question the future of industrial, municipal, recreation/tourism and other development in Abitibi-Témiscamingue, particularly in the Cadillac Fault area, a prolific gold producing structure of Archean age, located near the protection area for woodland caribou. A comment was made that this would have socioeconomic consequences and a negative effect on project funding. The proponent's efforts to reduce its environmental footprint and offset habitat losses were mentioned. Concerns were expressed that if a well-designed project such as this one is rejected, this does not bode well for any other such development in the region. A question was raised about whether other mine projects within range QC1 would now be rejected by the regulatory authorities because of the cumulative effects. New mines must be allowed to open to ensure lasting employment in the mining industry. Areas that hold promise for the discovery and development of mineral resources should be considered an important asset for social development, wealth creation for communities in the resource regions, the provinces and for all	case-by-case basis, taking into account several elements including the characteristics of the project, the risks associated with the potential cumulative environmental effects, the state (health, status or condition) of the valued components that may be impacted by the cumulative environmental effects, the potential for mitigation and the extent to which mitigation measures may address potential environmental effects; and the level of concern expressed by Aboriginal groups or the public.		

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	Canadians.			
Monitoring and follow-up				
Agnico Eagle	It is proposed that monitoring be carried out over 10 years instead of 15 years to assess the effectiveness of revegetation of the mine site using native coniferous species in accordance with the requirements of Directive 019.	Based on the advice received from the expert federal authorities, the Agency considers that monitoring over a period of 15 years is necessary to assess the effectiveness of revegetation of the site.	No changes required.	No changes required.
Lac Simon First Nation	On the whole, the Lac Simon First Nation is satisfied with the report and the potential conditions and considers that the Agency's consultations as part of the environmental assessment were conducted in a satisfactory manner. However, it has neither the funding nor the personnel needed to participate in an effective or meaningful way in preparing the documents mentioned, a process that should be carried out in collaboration with Lac Simon, nor would it be able to participate in environmental monitoring. Lastly, the Lac Simon First Nation asked about the implementation of follow-up measures for a number of years as well as after mine closure, or in the event of bankruptcy of the mining operation.	The Agency will require that the proponent develop, in consultation with the First Nations and the competent authorities, follow-up requirements to assess the effectiveness of site restoration. As a minimum, the proponent will carry out this monitoring for at least 15 years after the end of decommissioning. The proponent is required to provide the results of the follow-up program to the First Nations, Environment and Climate Change Canada and the other competent authorities annually.	No changes required.	No changes required.

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		The Quebec *Mining Act* sets out requirements to ensure the restoration of lands affected by mining activities. Under the Act, the proponent must submit a restoration plan and a financial guarantee to the Government of Quebec for restoration of the site. Under the *Metal Mining Effluent Regulations*, regular follow-up is required during the first 10 years after mine closure and is compulsory even in the event of bankruptcy. The Agency is also responsible for ensuring the conditions are applied. The Agency provided the contact information for the supervisor of the compliance team to the Lac Simon First Nation. In order to support the participation of the Lac Simon and Kitcisakik First Nations in the monitoring program, the Agency is willing to consider the possibility of providing funding		

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		under its participant funding program in order to discuss needs and options. In the event that a proponent becomes insolvent, the Agency will collaborate with the other federal regulatory authorities to determine who will be responsible for ensuring compliance with the *Canadian Environmental Assessment Act, 2012*. The provincial authorities may also play a role in such situations and the Agency can provide contact information in connection with a request of this nature.		
Other comments				
Québec Mining Association, Rouyn-Noranda Chamber of Commerce and Industry	Reiterated their support for the project and encouraged the Canadian Environmental Assessment Agency to submit to the Minister of Environment and Climate Change Canada a report in favour of the project.	The Agency has considered all the comments received concerning the draft environmental assessment report. The conclusions presented in the Agency's final environmental assessment report are based on the documentation, the advice received from expert federal	No changes required.	No changes required.

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		authorities, including Environment and Climate Change Canada, and the traditional knowledge of Algonquin First Nations whose traditional territory is where the site that will be impacted by the project is located.		
Conseil régional de l'environnement de l'Abitibi-Témiscamingue (CREAT)	CREAT mentions that it agrees with the draft environmental assessment report and its main analyses and et conclusions. It is satisfied with the potential conditions presented and asked that they be recommended to the Minister of Environment and Climate Change and then be imposed as conditions to be met by the proponent of the Akasaba West mine project.	The Agency has considered all of the comments submitted concerning the draft environmental assessment report. The conclusions presented in the Agency's final environmental assessment report are based on the documentation submitted by the proponent, the advice received from federal expert authorities, including Environment and Climate Change Canada, and the traditional knowledge of Algonquin First nations whose traditional territory is where the site that will be impacted by the project is located.	No changes required.	No changes required.